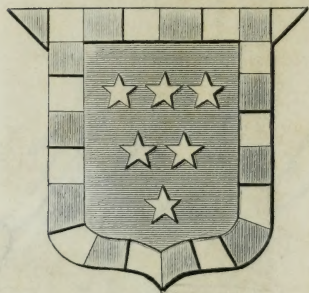



PORTRAITS
OF
MEN OF EMINENCE

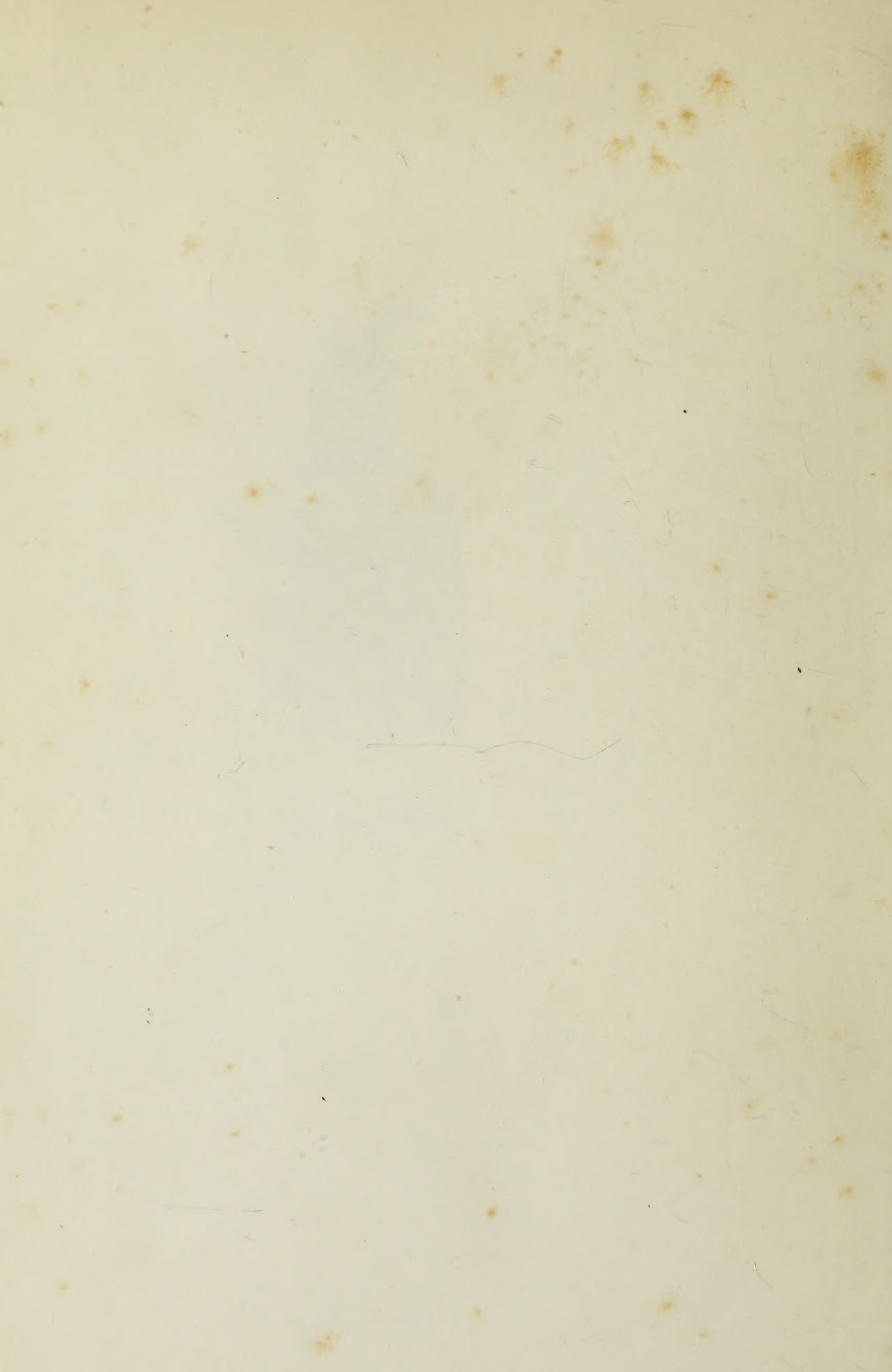
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MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART.

PORTRAITS
OF
MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART,

WITH

Biographical Memoirs.

THE PHOTOGRAPHS FROM LIFE, BY ERNEST EDWARDS, B.A.

EDITED BY

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1863.

PORTRALS

MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART

Biographical Memoirs

"The glorious sun
Stays in his course and plays the alchemist."—*Shakespeare.*



JOHN B. ALLEN & CO., 100 N. BROAD ST., N. Y.

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EARL STANHOPE, D.C.L., F.R.S.

It was said, with reference to the subject of our memoir, by a no less pointed observer than the late Lord Macaulay, that "industry and a taste for intellectual pleasures are peculiarly respectable in those who can afford to be idle, and who have every temptation to be dissipated. It is impossible not to wish success to a man who, finding himself placed, without any exertion or any merit on his part, above the mass of society, voluntarily descends from his eminence in search of distinctions which he may justly call his own." Thirty years have transpired since these sentences were written; the allusion to the early youth of the writer is now no longer appropriate, and the wished-for success has since been amply attained, but the sentiment comprised in the above lines is still the most natural that occurs to the mind in contemplating the prosperous literary career of a noble author.

Lord Stanhope has had the somewhat rare distinction of conferring celebrity upon both his titles, having already taken rank as an historian before he succeeded to the peerage. The reader may be not unwilling to be reminded that the founder of the earldom was a grandson of the first and celebrated Lord Chesterfield, whose younger son, Alexander, was Minister successively at Madrid and the Hague. His letters during his residence in Spain were published by the present Lord Stanhope in 1840. The eldest son of the Hon. Alexander Stanhope, after serving as a volunteer in the wars of William III., and in the expedition against Vigo in 1702, was, a few years afterwards, appointed Commander-in-Chief of the British forces in Spain. It was whilst he was serving in this capacity that the island of Minorca, with its harbour of Port Mahon, fell into his hands, from which event the second title of the family is derived. The earldom was acquired some years later,

after the successful Commander had filled various high offices of State under George I.

The third in descent from James, first Earl of Stanhope, the present Earl's grandfather, was the inventor of the Stanhope printing-press, and of improvements in navigation and many other of the arts. He married Hester, daughter of the great Earl of Chatham, and the celebrated Lady Hester Stanhope was one of their children. He was remembered also for his political eccentricities, especially his adoption of republican sentiments, and his surrender of the outward distinctions of the peerage. Philip Henry, the fourth Earl, was remarkable for his attachment to the institutions and society of Germany, of which nation he was almost as much a member as of his native country. His son, the present Earl, was born at Walmer in 1805, and was educated at Christ Church, Oxford, where he took the ordinary degrees.

No one doubts that the actions, military and civil, of his great ancestor were the inducements which directed Earl Stanhope's historical studies in the course they have taken. 'The War of the Succession in Spain,' of which the first edition appeared in 1832, was compiled to no small extent from the manuscript papers of General Stanhope, still preserved at the family seat, Chevening, Kent. This work was dedicated, with warm expressions of public admiration and personal regard, to the Duke of Wellington; and after having been grimly approved by the then Mr. Macaulay, with a magisterial severity natural to an Edinburgh reviewer sitting in judgment on a young Tory lord, it passed into a second edition, and has since been republished in more than one form. This was followed, in the year 1839, by the appearance of the first volume of Lord Mahon's 'History of England, from the Peace of Utrecht to the Peace of Versailles,' continued, in seven volumes, at intervals down to the year 1854,—a work which has long taken its place as one of our standard English Classics. In this history, the merits, already pointed out by the Edinburgh reviewer, of "great diligence in examining authorities, great judgment in weighing testimony, and great impartiality in estimating characters," were again conspicuous. Lord Mahon was still engaged in the congenial field of describing events in which the first Earl Stanhope played a leading part; but he had also to describe the conduct of the Earl of Peterborough, and lays claim, with justice, to have placed the character of his ancestor's rival on a higher level

than it had previously occupied in history. The stores of knowledge acquired by the writer are never forced on the reader's attention; but those who are gratified with the flow of Lord Mahon's matured writings will be mistaken if they conclude that what appears to be unlaboured is therefore inaccurate. *Ars celare artem.* The author had also the decided advantage, which he has enjoyed in all his works of eminence, in being able to bring forward stores of original matter to enrich the details of history. Some peculiarities of style, such as a sententiousness pronounced by the Edinburgh reviewer to be "oracular," and a want of ease in composition, were so far corrected, that in 1836 another writer in the same Review is found to approve the unaffected diction of the author, "accompanied by an occasional mixture of familiar phrases which are by no means displeasing." The same (politically hostile) reviewer declares the reflections to be "benevolent and humane, and, when not biassed by party politics, to be generally liberal."

In 1829, three years previous to this publication, Lord Mahon published a 'Life of Belisarius,' pointing out some errors into which Gibbon had fallen; and the success of this attempt was acknowledged at home and abroad, amongst others by Von Hammer, a critic of eminence at Vienna. In 1845 he edited Lord Chesterfield's 'Letters,' and at intervals from 1833 to 1846 he was the writer of articles, mainly historical, in the 'Quarterly Review.' Some of these, 'Joan of Arc' for example, have been published in a cheap and popular form; and the whole series was issued in the year 1849 collectively, as part of 'Murray's Home and Colonial Library.' In the same series appeared, in 1845, the admirable biography, the 'Life of Condé.' An extract from the 'History of England' made its appearance in 1838 under the title of 'The Rise of our Indian Empire;' and a similar excerpt, under the name of 'Lord Mahon's History of the American Revolution,' has been commented on in North American Reviews.

Shortly after his elevation to the peerage, in 1855, Lord Stanhope again took a conspicuous place in the public eye, as being one of the literary executors of Sir Robert Peel. Upon the death of that statesman, the world at large became aware that his papers had been bequeathed to Lord Mahon and Mr. Cardwell, upon trust for publication, in terms which left it entirely with them to decide on the period and on the mode of making them public, "and in full assurance that they would so exercise the discretion given to them

that no honourable confidence should be betrayed, no private feelings be unnecessarily wounded, and no public interests injuriously affected, in consequence of premature or indiscreet publication." This codicil was dated in March, 1849; Sir R. Peel died in May, 1850; and in 1856 Lord Stanhope and Mr. Cardwell, in the exercise of their discretion, produced the first volume of the 'Memoirs of the Right Hon. Sir Robert Peel,' containing letters and papers relating to the Roman Catholic Question in 1828 and 1829. In the following year appeared the second volume of the 'Memoirs,' comprising documents bearing in like manner on the New Government from 1834 to 1835, and the Repeal of the Corn Laws from 1845 to 1846. The title 'Memoirs' may be objected to as being ambiguous, the volumes containing no narrative, but simply a collection of papers; these, however, are of the very highest value, as being authentic materials for the history of the period.

This publication has since been surpassed as a literary effort by the 'Life of William Pitt,' which has recently appeared in four volumes. This work is now in the hands of every student of modern history, and of a wide circle of general readers. It has been truly described as filling up a niche in biography heretofore unoccupied; it is everywhere faithful, simple, exact, and unlaboured; and it is founded, to a great extent, upon new and valuable documents, such as the letters of Pitt to his mother, and to his brother, the Earl of Chatham, and the correspondence of King George III. with the minister; a series of letters which has placed in an unexpectedly favourable light the abilities of a Sovereign which it has been the fashion of late, in some quarters, to depreciate.

The above list is not an exhaustive catalogue of Lord Stanhope's published works; but it embraces the main particulars, and may be closed with a notice of the collection of 'Miscellanies,' chiefly in prose, which has been issued this year. This small volume contains some hitherto unpublished letters of Pitt, Burke, Windham, Sir R. Peel, the Duke of Wellington, and others, too important to be overlooked by the future historian, though of indirect bearing only on the events which he narrates.

Turning to the career of Lord Stanhope in public and political life, we find that he was first returned to Parliament as member for Wootton Bassett in October, 1830. When this borough was consigned, in the following year, to the limbo of Schedule A of the Reform Bill, notwithstanding a hopeless protest from its re-

presentative, who both voted and spoke against the bill, Lord Mahon sat in the first Reformed Parliament for Hertford. Here he became a supporter of Sir R. Peel, as much from personal as political attachment; and during his short administration filled the office of Under-Secretary for Foreign Affairs under the leadership of the Duke. In this capacity, in March, 1835, he defended the then pending appointment of Lord Londonderry as ambassador to Russia. After 1835, Lord Mahon went into opposition on Foreign Affairs, devoting himself especially to the then engrossing topic of Spanish politics. He diverged also largely into other subjects. In the Copyright discussions he took a leading part, voting first of all against Mr. Serjeant Talfourd's proposal for an extension of copyright to sixty years; and subsequently, in 1842, obtaining leave to bring in the bill on this subject which is now the law. Serjeant Talfourd had in 1841 declined standing again for Reading, and was not now in the House; and Lord Mahon adopted his measure, with the important variation of cutting down the term of sixty years to twenty-five, suggesting also a power (not afterwards granted) to the Privy Council of preventing the suppression of valuable works by the representatives of the deceased author. In April, 1842, Lord Mahon delivered one of his most elaborate and best-remembered speeches on the whole question of copyright, illustrating his argument with literary recollections and memoranda in a manner which was equally novel and attractive to Parliament. He was followed by Mr. Macaulay, in a brilliant oration similar in style. By the law at that time, copyright was for life *or* for twenty-eight years. Lord Mahon's proposition was to extend the right to the limits of life *and* forty-two years. Mr. Macaulay's amendment was that it should be enjoyed for life *or* for forty-two years, and this regulation (with the additional proviso that, when the case arose, it should extend also for seven years after the author's death), after repeated divisions, was ultimately carried. In the same year we find Lord Mahon advocating the cause of dramatic authorship, and assailing the licensing system. International and colonial copyright were branches of the former subject, to which it was natural that the mover of the English Copyright Act should turn his attention.

From the 5th of August, 1845, to the close of the second Peel administration (July, 1846), Lord Stanhope occupied the post of Secretary to the Board of Control. As a necessary condition of

holding office at so critical a period, he was a supporter of the Repeal of the Corn Laws. He also voted for the foundation of the Irish colleges (as he had always been in favour of the grant to Maynooth), but with a protest in the former case against the absence of collegiate religious instruction; and in 1847 he strenuously maintained the expediency of the Education grant. In the following year his Lordship both voted and spoke against the removal of Jewish disabilities, founding his opposition on the ancient constitutional maxim, that Christianity was parcel of the law of England; and he also opposed the bill for legalizing marriage with a deceased wife's sister.

It was in June, 1852, that, upon the National Gallery vote, Lord Mahon first announced in definite terms a proposition for the establishment of a National Historical Portrait Gallery, adding that he had already, during the late Sir R. Peel's administration, ventured to make a similar suggestion. The idea was recognized as a very valuable one, but the time had not arrived for its development. In the following August Lord Mahon lost his seat for Hertford, having been headed by a majority of twenty-five votes by Mr. T. Chambers, after a close contest. The fact of his having alienated some of his principal agricultural supporters in consequence of his vote for the Repeal of the Corn Laws, led, no doubt, to this result.

On the 2nd of March, 1855, the fourth Earl Stanhope died, and Lord Mahon was called to the Upper House as fifth Earl. His first speech in that chamber was in the memorable debate which took place on the question of Lord Wensleydale's Peerage. It will be remembered that Lord Chancellor Cranworth's proposition was met by a resolution of Lord Lyndhurst, to the effect that the patent of peerage for life was illegal, and that the holder was absolutely disentitled to sit in the House of Lords. To this Earl Grey moved, by way of amendment, that the House was not justified in assuming the illegality of the patent; to be followed by other resolutions in the event of its being carried. Lord Lyndhurst's proposition was maintained by him in one of those marvellous addresses which from time to time have powerfully influenced both the Upper House and the country; and on this occasion he was supported by Lord Stanhope, who thought that after so long a desuetude of the Royal prerogative it must be assumed no longer to exist. His Lordship took occasion at the same time

to point to that most delicate of constitutional subjects, the condition of the appellate jurisdiction of the House of Lords. In the following month, on the 2nd of May, Earl Stanhope brought forward his celebrated proposal for the formation of a Gallery of National Portraits, in a speech memorable for its delightful illustrations, and for the unaffected charm of its delivery. He was complimented by Lord Lansdowne, who said that the suggestion "could not come from any person with greater grace than from his noble friend, who had so long been associated with pursuits so honourable to himself and so beneficial to the country in the path of historical research." Lord Ellenborough, the Duke of Argyll, Lords Carnarvon, Harrowby, Redesdale, and others approved the scheme in scarcely less flattering terms; and the result is the collection now assembled at 29, Great George Street, Westminster, which is the germ of a great national institution. Of this gallery his Lordship was established chairman in the following year.

Other subjects with which Lord Stanhope's name is associated in public are, that of Secondary Punishments, in which matter his Lordship was, and, we believe, is an advocate of transportation as opposed to the ticket-of-leave system; the Oaths of Abjuration Bill, which was rejected in 1856 on his motion; the Divorce Bill, which he supported; and the Abolition of Church Rates, which he opposed in 1858.

Most appropriately it fell to the lot of an historian to be the mover of the address in 1858, which was followed by the removal of the political services from the Prayer Book; but on Lord Ebury's motion two years afterwards Lord Stanhope took pains to explain the reasons why he could not advocate the proposal for shortening the services actually in use. When, in 1860, the state of our diplomatic relations with the Court of Rome was under consideration, Lord Stanhope initiated the discussion in the House of Lords by moving for a copy of the Foreign Office despatch on the subject; and not only did he support the establishment of a mission, but went so far as to offer a suggestion for the foundation of an academy, with art studentships, in Rome. The latter proposal was too great an innovation upon British principles and prejudices to have any hope of a favourable reception. Its announcement, however, was an indication of the strong interest felt by Lord Stanhope in the condition of the arts,—a growing feature in his public career, from his appointment in May, 1844, in conjunction

with the then Mr. Macaulay, to be one of the Fine Art Commissioners, down to the present time. The final report of the Commission was made in March last, at which meeting Lord Stanhope occupied the chair. His Lordship is now Chairman of the Commission on the state of the Royal Academy, which was appointed in February last.

In the year 1846 Lord Stanhope was elected President of the Society of Antiquaries, and has ever since contributed, by his learning and influence, to the well-being of that valuable scientific body. He has also succeeded the Marquis of Lansdowne as President of the Royal Literary Fund.

As Lord Rector of the University of Aberdeen, he delivered to the Marischal College an inaugural address, in March, 1858. Lord Stanhope is moreover a D.C.L., F.R.S., and Trustee of the British Museum.



SIR CHARLES LYELL, D.C.L., F.R.S.

FROM the highest ridge of the Grampian Hills the view extends over the whole of Forfar,—the noted county of paving-stones,—from the Tay to the ocean, and takes in even the peninsula of Fife and the heights of Lammermuir. In the midst of this expanse, the accustomed eye, guided by the grey walls of the castle of Inverquhar and the rising smoke of Kerriemuir, can pick out the broad lands of Kinnordy, the seat of the Lyells, where Sir Charles was born on the 14th November, 1797. He received his early education at Midhurst, in Sussex, whence he proceeded to Exeter College, Oxford, taking degree as B.A. in 1819, and M.A. in 1821. On leaving college he studied law, and was called to the bar in 1822; but he did not pursue this profession long, his natural taste for science having been specially incited towards geology by the admirable lectures of Dr. Buckland, then Professor at Oxford. His active geological labours seem to have commenced in 1824, in which year he was elected one of the Secretaries of the Geological Society of London. In 1825 he published, in Brewster's 'Journal of Science,' a paper on a dike of serpentine in Forfarshire; and in the same year he read to the Geological Society a paper on some freshwater limestone containing fossil fruit of *Chara*. In 1826 he produced papers on "The Freshwater Strata of the Hampshire coast," and on the "Plastic Clay of Hampshire and Dorsetshire," which were printed in the Transactions of that Society. In 1828 he was chosen Vice-President of the Geological Society; and in the same year undertook a journey into the mountainous and volcanic regions of Central France, visiting Auvergne, Cantal, and Velay, after which he visited Italy and Sicily. The results were published in the 'Annales des Sciences Naturelles,' and in the 'Edinburgh Philoso-

phical Journal.' All these early papers show the same remarkable power of observation, and capacity of using natural facts in illustration and explanation of geological phenomena, which have always characterized his writings.

But it was by the publication, in 1830, of his 'Principles of Geology'—after he had delivered some professorial lectures the year previous at King's College—that he burst at once into full fame; and justly so, for the production of that work was one of the most important steps ever made in the progress of Geology. William Smith, Buckland, Greenough, MacCulloch, Webster, Martin, and Mantell had broken the ground in the direction of inductive reasoning; but Lyell's book, so complete, so logical, so earnest, so loaded with facts, and correct reasonings from them, gave indeed to that science a new character, removing it for ever from the class of visionary speculations, and establishing it thoroughly as a legitimate branch of inductive philosophy. Even in the first edition the whole and difficult subject of geological dynamics was fully entered into; but its chief and proudest merit is the success of the attempt to explain the former changes of the earth's surface by the long-continued operation, through indefinite periods, of causes now in action, even to the accounting for former variations of climate by corresponding variations in the relative distribution of land and sea. This powerful advocacy of the just principle of examining the Present in order to restore the Past, laid the basis of the present high position and popularity of geology. The voluminous amount of facts that had been patiently and laboriously collected were rendered attractive by Lyell's clear argumentative logic, by their aptness in illustration, and, combined with a peculiarly flowing narrative-style of language, caused this elaborate treatise to be read by thousands with the same avidity as a stirring novel.

In 1838 his 'Elements of Geology,' a work also of great merit, appeared. Both books have since passed through numerous editions; the former as many as nine, besides a French translation by Madame Meulien (1840), under the direction of the famous Arago. After a third edition the 'Elements' were reproduced, with an increased scope of subjects, under the new title of 'A Manual of Geology,' of which there have already issued two editions; the author in all cases revising or re-writing up to the latest phase of geological knowledge.

But to return to the earlier periods. In 1831 Mr. Charles Lyell was appointed Deputy-Lieutenant of his native county.

In 1833 he was honoured with the Royal Society's gold medal for his great work, 'The Principles of Geology.'

In 1835 he delivered the Bakerian Lecture "On the Proofs of the Gradual Rising of the Land in certain parts of Sweden."

In 1836 he visited the Danish islands of Seeland and Moen, examining their Cretaceous and Tertiary strata. In 1835-6 he was chosen President of the Geological Society, an office he held again in 1850-1; his addresses for those four years being remarkable expositions of the prevailing topics of geological interest at the periods of their deliverance.

An invitation to deliver a course of lectures at Boston, in 1841, induced him to cross the Atlantic; and he remained in the United States for more than a year, travelling over the northern and middle States, and as far south as Kentucky, visiting also Canada and Nova Scotia. After this journey he produced his 'Travels in North America,' illustrated by a remarkably fine geological map. In 1845 he again visited America, examining chiefly the southern States and the coasts bordering the Atlantic and the Gulf of Mexico. The great sunken area of New Madrid, devastated by the earthquake of 1811, was especially examined on this occasion. On his return he produced his 'Second Visit to the United States.' Other scientific results of these two voyages were given in numerous papers before the Geological Society in the sessions of 1846-1849.

In 1848 the honour of knighthood was conferred upon him, in consideration of his valuable scientific labours.

In 1850, during his Presidency of the Geological Society, he produced a valuable paper on "Craters of Denudation, with Observations on the Structure and Growth of Volcanic Cones;" and in 1851 one "On Fossil Rain-marks," illustrated by phenomena he had witnessed in the Bay of Fundy. In the discussions on volcanic phenomena, particularly in respect to Von Buch's theory of "Craters of Elevation," Sir Charles Lyell has been one of the most prominent and powerful debaters. He had given at length in his first edition of the 'Principles' his grounds of objection to the theory Baron Von Buch had originated in respect to the Caldera of Palma, the Gulf of Santorin, and other bowl-shaped cavities of grand dimensions, which Sir Charles regarded as the circular

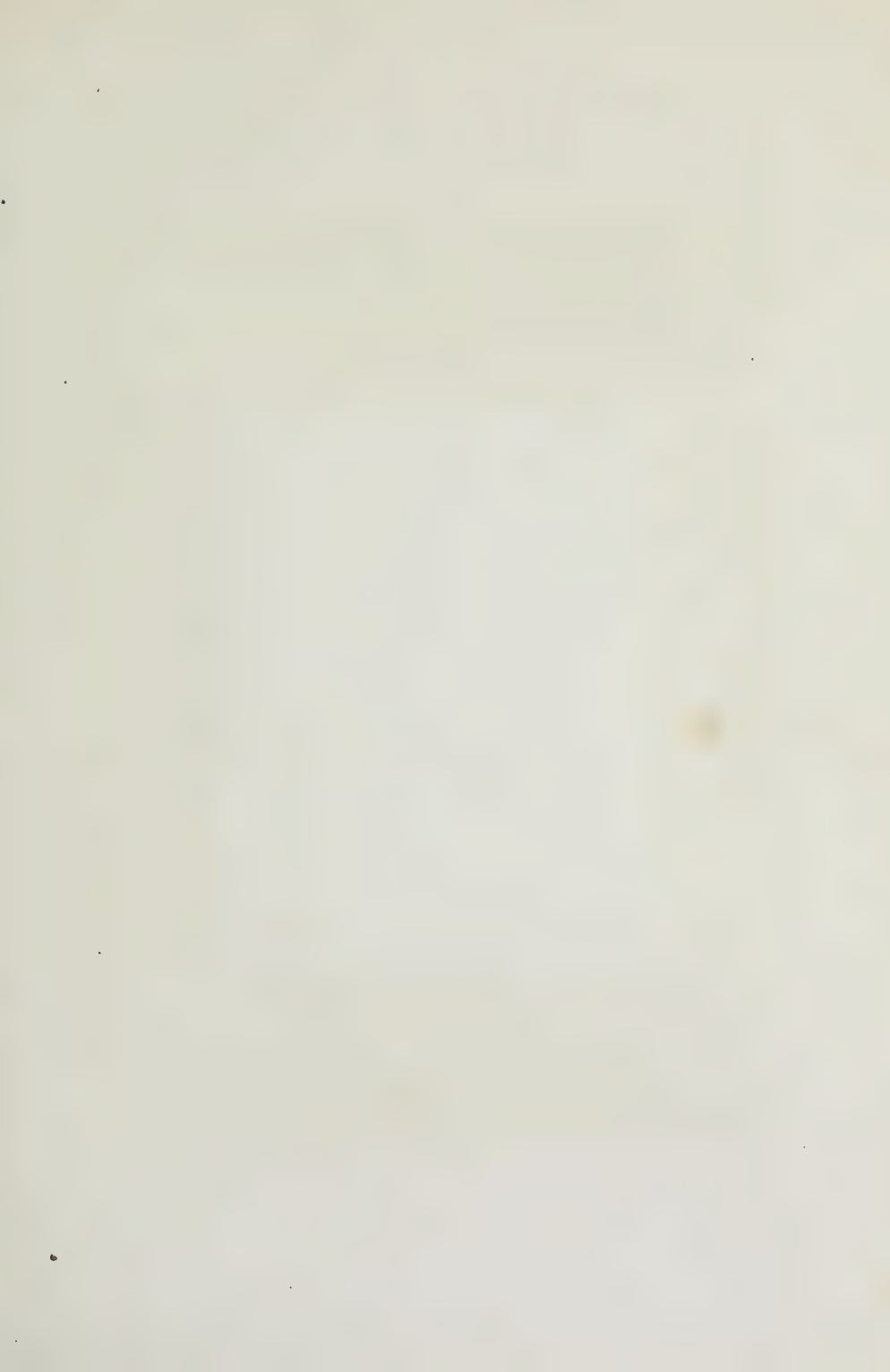
escarpments of cones of eruption. Again, in the second edition of his 'Principles,' 1832, in 1849 and 1854, after visits to Madeira, Teneriffe, Palma, and the Grand Canary, and other volcanic regions, in papers read before the Geological Society, he attacked the same theory, which may be said to have received its death-blow in 1858 by his elaborate paper before the Royal Society "On the Consolidation of Lavas on Steep Slopes, and on the Mode of Origin of Mount Etna."

In 1858 the Royal Society conferred upon him their highest reward—the Copley Medal.

Many other papers have appeared at various times on different subjects, but in the modern progress of geology his direct labours have been more especially identified with the classification of the Tertiary formations, which he was the first to divide into Eocene, Miocene, and Pliocene on the principle of the relative proportions of recent to extinct species of Mollusca amongst the fossil shells of the respective groups. The approximate estimations of long periods of time, as evidenced in existing phenomena, as well as in those of geological eras, have also been special subjects of Sir Charles's consideration, as in his attempts to assign the age of the lava-currents of Auvergne. In America, also, he endeavoured to get at the time the mighty cataract of Niagara had been cutting back its way towards Lake Erie, by the marks the foaming river had worn in its gorge's sides, and the known rate of retrogression of the "Falls."

The scientific writings of Sir Charles Lyell show that, besides the countries already alluded to, he has explored, geologically, parts of Norway, Belgium, Switzerland, North and South Germany, and the volcanic regions of Catalonia, in the North of Spain; while in North America his observations, made during three different visits, have extended from Canada, or from the basin of the St. Lawrence, to the mouth of the Mississippi.

In his last important work, 'The Geological Evidence of the Antiquity of Man,' published during the present year, and which has already passed through a second edition, he has summarized and discussed all the important facts accumulated up to the present time in favour of the high antiquity of the human race, viewing the subject also from archæological, ethnological, and philological stand-points.





JOHN HENRY FOLEY, R.A., R.H.A.

JOHN HENRY FOLEY was born in Dublin on the 24th of May, 1818. From early life his tastes pointed to Art, which being cherished by his grandfather, Mr. Schrowder, a sculptor of the same city, he entered the Royal Dublin Society as a student at the age of thirteen, and in one year carried away the first prize in each of the four separate departments for the study of the figure, animals, architecture, and modelling. With the ambition common to men of genius, he determined upon making London his future home. He became a student of the Royal Academy at seventeen, and being soon admitted to the higher schools for the study of the "life," worked with such power and earnestness as to be awarded the first prize therein. This success dates his transition from the pupil to the master, the Academy Catalogue for 1839 containing his name as the author of two works, 'The Death of Abel,' and that sweetly simple figure 'Innocence.'

In his twenty-second year (1840) appeared the 'Ino and Bacchus,' a conception of such classic beauty and poetic feeling as to place him at once on a level with the master-spirits of his art. This charming composition now graces the vestibule of Bridgewater House, having been purchased in marble by that distinguished patron of art, Francis, first Earl of Ellesmere. Following this, and still indulging in the ideal fancies of the poet, in 1842 was produced 'The Houseless Wanderer,' a shivering, girlish form, so touchingly expressive, the coldest heart might warm in response to its appeal for pity.

It will be remembered that by this date the Westminster Hall competition, in 1844, was becoming the leading topic in art circles, as an occasion for demonstrating to the world the existence of an art element in the national mind, and for once more practically

vindicating our competency against the taunts of those who contend that our lymphatic temperament renders us insensible to the beauties, and incapable of mastering the difficulties, of art. So rare an opportunity was not lost to the body of English sculptors, who, with one exception only, entered as competitors for the promised honours. Of this number was Mr. Foley, who at the close of the exhibition was proclaimed one of the three successful candidates. The works exhibited by him in this contest were the 'Ino and Bacchus' and 'A Youth at a Stream,' modelled for this occasion, a creation of the purest ideal beauty and natural truth, combining every quality essential to the most exalted art, and well calculated to enhance the brilliant promise founded on the 'Ino and Bacchus.' This work is now familiar to us all as one of the classics of English sculpture.

The successful issue of this competition placed in Mr. Foley's hands the commissions for the statues of 'Hampden' and 'Selden,' for the New Palace of Westminster; the former being executed in 1847, the latter not until 1853. These two noble figures, now in St. Stephen's Hall, rank among the finest portrait-statues in existence; an earnest thoughtfulness and manly vigour animating every limb and feature, evinces the deep penetrative discernment of character and power of expression possessed by the artist; whilst the costume and accessories are, in their treatment, in the highest degree picturesque, yet withal duly subordinate to individuality.

The great success attending these two last-named works exercised a material influence on the future career of their author, for previous to the 'Hampden,' Mr. Foley's productions had been chiefly of an ideal character, a class of subject he had originally purposed exclusively to follow; but, in the absence of demand for such labours, offers of portraiture induced him to accept commissions for the latter, for which his extended academic training gave him unusual advantages. From this date we find portraiture constituting a great part of his practice, by which change, though to the loss of ideal works, our School of Sculpture has become enriched by portrait-statues of the highest order. The Royal Academy, in 1849, elected Mr. Foley an Associate of that body. In 1851 appeared 'The Mother,' a group of maternal grace and childish playfulness. Two years after this date was produced 'Selden,' and in 1854 'Egeria,' executed for the Mansion House. This charming

figure forms one of a series of commissions, in illustration of English history and English poetry, given by the Corporation of London, under the mayoralty of Alderman Challis.

High, however, as the qualities of Mr. Foley's works had securely placed him in the list of European artists, he was by this time deeply engaged on a group of the late Lord Hardinge and charger, the result of which has tended, more than the combined influence of all his previous successes, to his present elevation among his contemporaries. The small model for which his late Lordship sat was produced in 1849; but the large work was not completed till 1856, although the horse, Meanee, a favourite Arab, which bore his Lordship through the Sutlej campaign, was finished in 1853. In attempting to describe this magnificent work, words can but poorly convey an idea of its daring power and masterly grandeur; but artists, who have travelled wherever the remains of art exist, whether Classic or Gothic, pronounce it the finest work of its kind in the world. Those who can recall the occasion of its exhibition at Burlington House, will remember how its criticism was marked by every term that admiration could suggest; what, however, must have been more gratifying to its author was the unanimous acclamation with which its appearance was hailed by the whole brotherhood of art. A requisition was presented to Mr. Foley, bearing the signatures of upwards of 150 leading names in art and literature, expressive of their admiration of its high merit, their desire to see its duplicate erected in London as a testimony to the capability of English art, and their willingness to assist in the accomplishment of the same; such a compliment had never before been paid to any English sculptor. This unrivalled group, representing his Lordship as surveying the operations of the battle-field, was executed for Calcutta, in commemoration of his services as Governor-General of India; and a friend, writing from that city, says, that the horse-trainers of the desert, struck by its force and nature, exclaim, "It is the work of the good Genii, for no skill of man could make it."

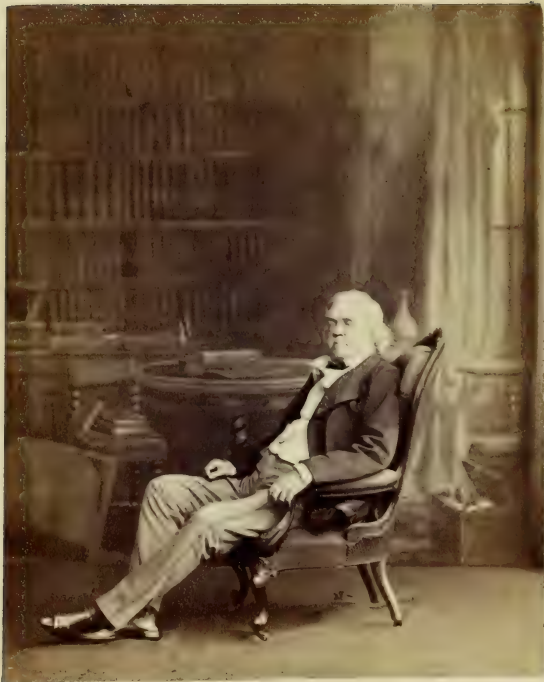
Two years subsequent to the completion of the 'Hardinge,' the Royal Academy conferred on its author the rank of Academician, at which date (1858) was executed a second commission for the Mansion House, 'Caractacus.' This heroic figure, most grandly conceived in action and expression, ranks among the finest works of its author, and is especially to be noted for a profound anatomi-

mical knowledge and masterly treatment of masculine form. In 1859 Mr. Foley presented to the Academy his diploma work, a statuette of the elder brother in 'Comus,' since which time he has been chiefly engaged on monumental and portrait-statues. The model for the statue of Manockjee Nesserwanjee, a Parsee, was completed in 1861 for Bombay; in the year following 'Goldsmith,' for erection in front of Trinity College, Dublin, one of the most successful portrait-statues of modern times.

Among the principal works of a monumental kind erected by Mr. Foley, may be noticed those for Mrs. F. West, in Milford Church, Hants.; Sir F. Lawley, Hints Church, Staffordshire; Hon. James Stuart, for Ceylon, unfortunately lost at sea; General Nicholson (who fell at Delhi), in Lisburne Cathedral, Ireland; Mr. Whittaker, of Hurst; and James Ward, R.A.; while in his busts live some of the most distinguished men of the age. Of commissions in hand may be mentioned those of the late Prince Consort, for Birmingham; Sir Charles Barry, for the Palace of Westminster; Lord Herbert; Lord Canning; Sir James Outram (equestrian), for Calcutta; Mr. John Fielden, Todmorden; and Father Mathew, for Cork.

In the Hyde Park Exhibition of 1851 and the International gathering just closed, Mr. Foley's works were especially prominent by their number and importance, and largely assisted in upholding the rank of British Sculpture. The principle of his study is founded on the Antique, aided by an intimate knowledge of, and reference to, Nature; but the peculiar characteristic of his genius is its extreme versatility; for, in viewing his varied range of subject, we find the same evidence of original power marking alike his treatment of the ideal, the historic, or the individuality of portraiture; and whilst his ideal groups betray a highly poetic conception, his portrait-statues are in the highest degree the embodiment, mental and personal, of the individuals represented.

At the close of last year Mr. Foley was elected a member of the "Académie Royale des Sciences, des Lettres, et des Beaux-Arts de Belgique," in the room of the late Professor Ritschel, of Dresden.



WILLIAM MAKEPEACE THACKERAY.

NOTWITHSTANDING the assertion of Pope, that the life of a wit is a warfare upon earth, there are examples of wits who have lived as quietly as other people. The author of 'Vanity Fair' is one of them. Nothing wonderful has happened to him, although he holds a place amongst wits from which, under Pope's conditions, considerable disturbance might have been expected. The personal career of William Makepeace Thackeray has been simply that of a private gentleman, emphatically marked by the special characteristics which are popularly understood to distinguish the English variety of the species. His biography yields no materials out of which the most lively imagination could manufacture a striking narrative. The action of the life-drama of which he has been the hero is entirely mental; and if you want to know what manner of man he is, and wherein lies the difference between him and the crowds of educated and intelligent gentlemen who, like him, have passed through the usual curriculum of the university, the clubs, and the *salons*, and who, while he has attained celebrity, still haunt the shadowy places in society, you must seek for the satisfaction of your curiosity in his writings.

To the bleak wolds of Yorkshire contemporary biographers have traced the family from which William Makepeace Thackeray is descended. We are not aware whether the name is yet familiar in those high latitudes; but certain it is that his immediate progenitors were established in a warmer climate. His father, and his grandfather before him, held civil appointments in Calcutta, where the novelist was born in 1811. India, however, has no further claim upon him than that of having given him birth. He was bred and trained under English skies, receiving the rudiments of his education at the Charterhouse, which was then presided

over by the late Dr. Russell, who had the honour of launching into the world several pupils who ultimately won their spurs in different walks of life. Mr. Thackeray afterwards went to Cambridge; but at the end of two years he left the University without taking out a degree.

The literary foundations which were thus laid do not appear to have exercised much influence over his early tastes, or to have guided him in the choice of a pursuit. Art, and not literature, was the mistress to whom he offered up his first love. His ambition was to become a painter. He resembled Hazlitt in this particular, that his passion lay in one direction, and his power in another. But there the comparison ends. Hazlitt failed; and Thackeray has given abundant evidence of a faculty for art which, with perseverance, must have conquered success. He was so much in earnest about it upon leaving the University that he went to Rome, where for some time he led the most delightful of all lives, known only to the enthusiastic student who, with easy resources at his command, is master of sufficient leisure to enable him to dream away whole days in the studios, listening to the talk of artists, and watching the canvas growing into life under their hands.

That luxury of thoughtful idleness, in which fancy builds up a future never destined to be realized, was of short duration. Rome was exchanged for London, and the palette was abandoned for the pen. How this transition came to pass is of less moment than the fact that the embryo artist had now become an author, and that, instead of following the course to which his inclination led him in the first instance, he occupied himself in working out the new vein which he had subsequently discovered, most probably by accident.

The apprentice-labours of men who have finally achieved distinction, present obvious materials for critical speculation, but they can seldom be traced with certainty. The difficulty is greatest in the case of writers who, like Mr. Thackeray, began in the journals, and who had long contributed to periodical literature before they obtained a reputation which made it worth their while to count up their fugitive productions. It is by no means unlikely that heaps of articles may have been published by Mr. Thackeray in the commencement of his literary life, which he has himself forgotten, and which, from the nature of the form they took, will never be recovered. He is said to have been a writer in the

'Times' when that journal was under the editorship of Barnes ; and at a later period he was a constant contributor to the 'Chronicle,' before the traditions of the Perry age had quite passed away. Of these contributions we know little, except that they embraced a wide variety of subjects, and that criticisms on books and elaborate essays on art, were mingled with leading articles on society and politics.

It was in 'Fraser's Magazine' that, under the pseudonym of Michael Angelo Titmarsh, the author of 'Vanity Fair' first became a recognized power in periodical literature. The power was not of a kind that always succeeded in conciliating the goodwill of the reader. The papers of Michael Angelo Titmarsh were tinged with what seemed a sinister spirit of sarcasm, which gave great offence in some quarters. But everybody acknowledged the originality and, so to speak, depth of their humour ; while a better knowledge of the writer, and the fuller development of his genius, enables us now to discover in the quips and cranks of Mr. Titmarsh, a wiser purpose and a kindlier intention than anybody was then disposed to give him credit for.

To that period belong several volumes of travels, embracing Ireland, France, and the East, and written in a vein as unlike any other books of travels, as travels are unlike epic poems. The paramount interest of such works as the 'Paris Sketch-book,' the 'Irish Sketch-book,' and the 'Journey from Cornhill to Grand Cairo,' arises from the circumstance that they could not have been written by any one else, and that they bear the visible impress of their authorship. Marked by a keen insight into character, a quick appreciation of the ridiculous, and a humour at once subtle and brilliant, they are by no means of equal merit, nor are they sustained at an equal height throughout. But, although we could not have predicted from any of them the series of famous works by which they have been succeeded, it is easy to perceive in them the germs of something higher than themselves. Mr. Thackeray seemed at this time to be playing with his resources, and to be pruning his wings for higher flights. His contributions to 'Punch' were more or less preparatory exercises ; and the 'Snob Papers,' 'Jeames's Diary,' and the 'Fat Contributor' may be regarded, like the 'Kickleburys on the Rhine,' and other sketches from life, as rough studies for the larger pictures that were to be afterwards executed by the maturer judgment of the experienced artist.

The opening number of 'Vanity Fair' appeared in 1846. It is said to have been rejected by the first publisher to whose opinion it was submitted; but it soon had its revenge in full. The town felt that there was a capable hand in its pages before it had run into its third number, and six months had not elapsed when the author took his place amongst the foremost novelists, not of our day alone, but of our language. The progress of the work gradually unfolded a greater variety of powers than had been previously combined in a story of modern life, and Waterloo divided the applause of the critics with *Becky Sharpe* and the dens of fashionable life. The severity of the satire in 'Vanity Fair,' and in all the subsequent novels by the same author, is vindicated by its justice. Nor is there any more conclusive test of the effect left by these works upon the public mind than the fact that Mr. Thackeray is familiarly known in his own generation not as the "Great Satirist," but as the "Great Novelist."

'Pendennis' succeeded 'Vanity Fair,' but cannot be said to have reached its excellence. Comparisons of this kind, however, involve questions of taste very difficult of decision; and, in spite of abstract canons of criticism, readers will be found who maintain predilections for which they cannot render a satisfactory reason. Upon the merits of the next novel, 'Esmond,' nearly all classes of readers are agreed. Even they who hate *Beatrix*, and do not like the complexion of the narrative, and who think that the structure is a mere piece of affectation, like a modern young lady dressed up in stiff brocade and Elizabethan lace, are compelled to admit that the English is pure and idiomatic. In this respect 'Esmond' is a remarkable and instructive work; it stands apart, in our time, for the beauty of its diction. Mr. Thackeray's style unites many of the highest excellences of our best writers, and it is shown in its perfection in 'Esmond,'—strength, ease, and simplicity are amongst its conspicuous qualities; there is no vanity of manner, no false pomp of phraseology, the expression is everywhere clear, direct, and resonant, and all without the slightest appearance of effort.

The 'Newcomes,' the 'Virginians,' the 'Adventures of Philip,' and 'Lovel the Widower,' followed 'Esmond'; and at intervals appeared the 'Humourists,' and the 'Four Georges,' which formed the substance of lectures Mr. Thackeray had delivered in England and America. Out of all these works, the character of Colonel

Newcome will at once come to the mind as the prominent figure. Had Mr. Thackeray produced no other creation, it would have acquired for him a permanent place amongst our great writers of fiction. It is as perfect in its way as Don Quixote or Parson Adams,—a thorough gentleman, with a tender and loyal heart.

Judging from the verdicts of posterity in other cases, 'Vanity Fair' seems to us the most likely of all the novels to maintain its reputation. The work that is most compact and direct in treatment, that is nearest to general truth, and has most of the permanent elements of life, and least of the accidents of time and place, usually outlives its contemporaries. Of De Foe's novels and semi-novels, 'Robinson Crusoe' is the only one known to the mass of readers; and, although 'Amelia' will probably always find a corner in choice libraries, and 'Jonathan Wild' is still occasionally talked of, Fielding survives mainly in 'Tom Jones,' which holds its ground by virtue of its constructive skill, unity, wit, and profound knowledge of human nature. For similar reasons, a long tenure of popularity may be anticipated for 'Vanity Fair;' it is the most complete, varied, and artistic of Mr. Thackeray's novels, displays more power in different directions than any of the rest, has more story in it, and is less broken up by excursions and digressions. We do not expect that this comparative estimate will carry universal assent. Many circumstances combine to distract opinion in the lifetime of an author, and to produce a diversity of judgments; and hence each novel has its own circle of admirers, who set it above the rest. We have heard that Lord Macaulay considered 'Pendennis' the best of the series; and if the constituencies of the circulating libraries throughout the country could be polled for their favourite, there is no doubt that the 'Newcomes' would run away with a large proportion of the votes.

The fault which most people find with Mr. Thackeray's novels is that the story is less attended to than the humour and wisdom of which it is the vehicle. The old complaint over again—the half-pennyworth of bread to the ocean of sack; but such sack! Who would willingly relinquish those delectable bits of egotism, and snatches of wandering gossip by the roadside, for the sake of getting on a little faster with the incidents? Yet it is indisputably true that you must occupy your platform with action, if you would keep your audience awake, and that you must interest your readers in your plot if you desire to interest them in your characters,

unless you are master of exceptional powers of some kind, or have some exceptional design to execute. Mr. Thackeray, however, must follow the bent of his genius in his own way; and it is clear that his genius is not dramatic. 'Lovel the Widower' was originally destined for the stage; but in that shape the threads of the story resembled the troop of horses which Ducrow used to scatter, with flying reins, over the circus. But Ducrow knew how to gather them up at will in his hand; an art which to Mr. Thackeray seems to be difficult, or which he does not care to cultivate.

The 'Humourists' and the 'Four Georges' are pure literary and historical studies. They are the only works in which Mr. Thackeray has had any scope for his scholarship and critical taste, and they are curious as indicating the manner and spirit in which he would be likely to deal with similar subjects on a larger scale. They bring together, with singular felicity, all those minor lights and shadows which history and biography generally consider beneath their dignity, but which are of the last importance to the true delineation of character. Many readers will be of opinion that their judgments are not always right; and, while we are willing to leave the Georges to their fate, we think that in the portraiture of Addison and Steele a grave error has been committed, and a grave injustice inflicted. But it is the province of works of this description to raise literary and historical questions; and differences on these and other points do not render us insensible to the grace, geniality, and wit which abound in these volumes.

To Mr. Thackeray's connection with the 'Cornhill Magazine' we are indebted for the 'Roundabout Papers,' which do not satisfy us so well in their collected form as they did singly, month by month. The reason is obvious enough; but they are nevertheless amongst the most pleasant and characteristic of all Mr. Thackeray's writings.

Perhaps we should note as an incident in Mr. Thackeray's life that he once contested the representation of Oxford and was defeated by Mr. Cardwell, to whom the world is much obliged for keeping the novelist out of Parliament. There is nothing to be added but a hope that the rumour is true that Mr. Thackeray is engaged upon a new story, and that he is gathering materials for a history of the reign of Queen Anne,—an undertaking for which nobody living is so well qualified.



SIR RODERICK IMPEY MURCHISON, K.C.B.,

D.C.L., LL.D., F.R.S.,

DIRECTOR-GENERAL OF THE GEOLOGICAL SURVEY OF THE UNITED
KINGDOM.

To say that at seventy-one years of age health and intellect are vigorously retained, is saying much; but to say that at that advanced age the latest scientific labour is the most brilliant of a gigantic series of a long and incessantly-active life, is saying that which few indeed can lay claim to. Yet such may be—nay, must be—truthfully said of Roderick Impey Murchison. Famous as he everywhere is as the author and elaborator of the Silurian system,—that wonderful classification of the oldest, most difficult, and vastest of all the geological formations,—his last labours, in 1860-61, “On the Classification of the Mountain Rock-masses of the Highlands of Scotland,” eclipses all his former successes in grandness of intellectual grasp and simplicity of reduction. Whatever Sir Roderick might have attained to as a soldier,—for in early life he served in the Peninsula and elsewhere (1807 to 1816), first under Wellesley and Moore,—he must ever be looked upon as a Commander-in-Chief amongst geologists. The same quickness of sight and command of combinations, the same careful and forethoughtful collecting of materials for a decisive blow, and the same decisive energy of attack when the means are ready, which are essential to the General dealing with troops, Sir Roderick exhibits in his intellectual marshalling of scientific facts, and his power of hurling them upon the decisive point. But so long, so voluminous, so excellent are his numerous works, that what would form important items in many a biography sink into secondary positions, or can only receive the merest passing glance, in anything but a special memoir of his long and indefatigable career.

A Highlander by birth, it must have been a gratification in the highest degree to bring the mature knowledge of his most experienced life to bear upon the grand, massive hills of his childhood, and there to gather his crowning laurels.

Murchison was born at Taradale, in Ross-shire (an estate which he inherited), on February 19, 1792. He was first educated at Durham Grammar School, and afterwards at the Military College of Marlow. In 1807 he obtained an ensigncy in the 36th Regiment of infantry, and served in the battles of Vimiero and Roldia, under Sir A. Wellesley, at Corunna, under Moore, and afterwards in Sicily, the Siege of Cadiz, etc. After the close of the great war, seeing no hope of active employment, he retired from military service with the rank of Captain of Dragoons (6th regiment).

After some subsequent years, divided between foxhunting, which he pursued eagerly, and tours in the Alps, Italy, and various parts of Europe, his geological career began with an observant paper, "A Geological Sketch of the North-Western Extremity of Sussex, and the adjoining Parts of Hampshire and Surrey," in which he ably made out and described the succession and physical structure of the Cretaceous and underlying rocks of the western portion of that very interesting district the Weald of Sussex and Hampshire. In this year, too, he made a tour, with his accomplished wife, the only daughter of General Hugonin, of Nursted House, Petersfield, to the Isle of Wight, and along the south coast of England to the Land's End in Cornwall. The summer of 1826 was spent in exploring the Scarborough and Whitby coast, the Western Isles and North Highlands of Scotland, and in comparing Brora, in Sutherland, with the eastern moorlands of Yorkshire. From 1825 to 1829 Sir Roderick was one of the Secretaries of the Geological Society, and in that period the following papers were contributed by him:—"On the Coalfield of Brora" (1827); "On the Isle of Arran" (1828); "On the Primary Rocks and Oolites of the North of Scotland;" and "On the Bituminous Schists and Fossil Fish of Seefeld, in the Tyrol;" and "On the Tertiary and Secondary Rocks of the Alps," in the 'Philosophical Magazine;' the results of personal travels in the north of Italy, the Bassanese Alps (1828-30), and in Central France, and of a second survey of the Scottish Islands (1827-28). There also appeared, in conjunction with Lyell, articles "On the Excavation of Valleys in Central France" and "On the Tertiary Beds of

Aix" in the 'Edinburgh Philosophical Journal;' "On the Lacustrine Deposits of Cantal," in the 'Annales des Sciences Naturelles.' In 1826 Sir Roderick had been elected a Fellow of the Royal Society, and in 1831 and 1832 he filled the office of President of the Geological Society. In this period we have further geological essays (in 1830):—"Fossil Fox of Cœningen;" 'Structure of Austrian Alps;' 'Tertiaries of Lower Styria;' and 'Austria and Bavaria;' 'Structure of Eastern Alps' (illustrated from a drawing by Lady Murchison); 'Secondary Formations of Germany;' 'Austrian and Bavarian Alps;' 'Vertical Stems of Plants in Oolites of the Cleveland Hills.' Besides these, were two most able Presidential addresses, and a 'Guide to the Geology of Cheltenham.'

This brings us to 1831, the memorable year in which, by the advice of his friend and instructor Buckland, he commenced those strenuous labours in Shropshire, which next extended to Wales, and subsequently applied to every region of the habitable globe, will make the name of Murchison pre-eminent in all time, and the Silurian System an indelible landmark in geology. The first public announcement of these labours was made at the British Association (of which Sir Roderick was one of the founders) at the York meeting, in October, 1831. From this date until 1837 his time was mainly occupied in field investigations in Salop, Hereford, Montgomery, Radnor, Brecknock, Caermarthen, Pembroke-shire, etc., in collecting and elaborating the details of the geological structure and the succession of the vast primordial fossiliferous and metamorphic rock-masses, thousands of feet thick, of those strangely contorted regions. Isolated papers from time to time mark the course of his progress in this interval, especially that in the 'London and Edinburgh Philosophical Magazine' for July, 1835, in which the term "Silurian System" was first applied to the Ludlow, Wenlock, Caradoc, and Llandeilo formations. This led up to the publication, in 1838-39, of his first grand work, of eight hundred quarto pages and forty plates of fossils, coloured maps, and sections, 'The Silurian System,'—a magnificent work, far beyond the ordinary resources of individual efforts, equalled only by the best and finest of imperial and governmental productions, and dedicated to the only man whose name will be ever gloriously linked with Murchison's stupendous labours—Sedgwick, of Cambridge. In a list of his published works during this period in our possession, we

find against the date 1836 the simple touching entry, in Sir Roderick's own handwriting, "death of my mother." No labours, even the highest mental or most active, take off pain of domestic trials, and this slight reference speaks more of filial love and deep respect than marble monument or word-eloquent eulogy.

Between 1836 and 1838, both inclusive, he first classified, with Sedgwick, the slate and culm rocks of Devonshire, and effected important changes in the geological map of Devon and Cornwall, carried on investigations in the Dudley and Wolverhampton coal-field, showing that coal could be profitably worked (as it has since been) under the Lower New Red Sandstone; and, completing the Silurian classification, he began that of the Devonian deposits.

In 1839, after the publication of his great work, 'The Silurian System,' he worked on these older rocks with Sedgwick and De Verneuil in various parts of France, Belgium, and Germany. At the invitation of the Emperor Nicholas I., he was engaged from 1840 to 1844, with Count Keyserling and M. de Verneuil, in the survey of the Russian Empire, having previously applied the Silurian classification to Germany. The results of these labours are recorded in another monumental work of large dimensions, 'Russia and the Ural Mountains' (1845), in two quarto volumes of 1200 pages, and 140 plates of fossils, views, maps, and sections, the result of four years of labour.

The high respect and value in which Murchison's labours were appreciated are testified by the honours conferred upon him by foreign Sovereigns. In 1841, while again President of the Geological Society, the Russian Emperor decorated him with the Cross of St. Anne, second class, in diamonds, and presented him a magnificent vase of Siberian aventurine; and again, three years later, on the completion of his survey, with the Grand Cross of St. Stanislaus. In 1844 the Royal Society granted to him their highest honour,—the Copley medal; and in 1846 his own Sovereign conferred on him the dignity of Knighthood.

It was in connection with these foreign labours that, in 1841, he proposed the term "Permian" for the classification of the highest Paleozoic rocks, and which system he subsequently applied to Germany, Britain, and other parts of Europe. Besides his labours in Russia, he worked out the Paleozoic Geology of Sweden and Norway by personal inspection, and classified the Silurian and Old Red formations of Scandinavia,—labours for which the King of

Sweden and Norway honoured him with a Commander's Order of the Polar Star, and the King of Denmark granted to him the Order of Dannebrog.

Having suggested, as early as 1844, that Eastern Australia might prove an auriferous country,—which he inferred from the similarity of its rocks to those of the Ural Mountains,—he incited the unemployed Cornish tin-miners in 1848 to emigrate thither and dig for gold, and in 1848 he received specimens of the metal. Thereon he wrote to Earl Grey, then Her Majesty's Secretary for the Colonies, pointing out that his theory *had been realized*, and that the Government should take immediate steps to secure the working of the metal on a well-arranged plan. In subsequent years, and also before the so miscalled *discovery* was made in 1851, Sir Roderick lectured on the same subject before the Royal Institute and the British Association for the Advancement of Science, and distinctly expressed his views regarding Australian gold in his article "Siberia and California," in the 'Quarterly Review' (1850).

In 1847-48 he travelled in the Alps and Italy, his work, 'The Alps, Apennines, and Carpathians,' being the result, and an Italian translation of it was made in 1850 by Professors Savi and Menegheni. This work is considered by many geologists as equal to any of the author's publications, and particularly in the clear demonstration he offered of the transition from the Secondary Cretaceous rocks of the Alps into the nummulitic Tertiary deposits.

In 1851 he revisited Scotland, and made important investigations, in company with Professor Nicol, proving the existence of Silurian rocks with fossils, and developing their classification, embodying the information in two valuable papers before the Geological Society, "On the Silurian Rocks of the South of Scotland," and "On the Geology of the North-West Highlands of Scotland."

In 1854 he published his 'Siluria,' a history of the oldest known rocks containing organic remains,—a smaller form of the Silurian system, but embracing the application of the system to all parts of Europe and America; in which, giving a complete view of the result of his own many years' researches and the contemporary labours of others, he brought up the history of the primary fossiliferous rocks to the existing level of human knowledge. Three editions have since been printed, and 'Siluria' is classed with the indispensable standard works of science. The first edition was

dedicated to Sir Henry de la Beche, whom Sir Roderick succeeded, in 1855, as Director-General of the Geological Survey of Great Britain and Ireland.

In 1856 Sir Roderick published a valuable geological map of Europe. He was also about this period active in applying the Silurian, Devonian, Carboniferous, and Permian classifications to Germany, Scotland, and other countries, and from 1858 downwards in making out the ascending order of the older rocks beneath the Lower Silurian and Cambrian of the north-west Highlands of Scotland—labours which produced his crowning reward; for in 1859 he received from the Royal Society of Scotland the first Brisbane gold medal, as a recompense for his classification of the Highland rocks, and for the establishment of the remarkable fact that the fundamental gneiss of the north-west coast is the oldest rock of the British Isles. An entirely new geological map of Scotland followed, in the preparation of which he was ably assisted by Mr. Geikie, of the Geological Survey.

Nor is Sir Roderick's name less known among geographers, although his fame chiefly depends on his geological labours. In presiding over the Royal Geographical Society during eight years, and in often officiating for other Presidents of that body, his devotion to its interests and advancement have been always warmly recognized; for he has been the zealous promoter of every bold adventure, and the true friend of every young aspirant for fresh labours in the field. His energy in advocating the search after Franklin, his warm support of Livingstone, and his successful appeal to raise a monument to the French Lieutenant Bellot, who lost his life in the search after Franklin, are among the proofs of his entire self-devotion to such good causes. His recent address on the discovery of the source of the Nile by Speke and Grant, his analysis of all the recent explorations in Australia, and his comparison of the state of Europe in former periods, show that his energies and intellect are unimpaired.

We must not omit to state that Sir Roderick Murchison has been for many years an active Trustee of the British Museum, and that in recognition of his merits the Queen has conferred on him a Commandership of the Bath.



DAVID ROBERTS, R.A.

THE career of this distinguished artist is an example of the success which often attends the exclusive pursuit of a single branch of art. David Roberts is known to the world as a painter *par excellence* of architectural subjects. Not confining himself to the technicalities or even to the ornamental details of the art, he selects some great or celebrated building as the central point of his picture, at the same time generally relieving it by the introduction of a striking landscape or a lively group of figures. So unvarying is this bias of taste, that amongst the many hundred compositions of this artist which most persons familiar with English exhibitions can call to mind, they will not recollect more than one or two which do not possess this characteristic. It is a proof of the painter's vigour of thought, that under these circumstances, instances of self-repetition occur so seldom as they do in his productions.

David Roberts was born at Edinburgh, on the 24th of October, 1796, and is said there to have set foot on the ladder of his profession at the very lowest step, by serving as an apprentice to a house-painter. Even in this capacity, his talents were conspicuous, and he was allowed an admittance to the "Trustees' Academy," where with Allan, Wilkie, and others, he acquired the rudiments of drawing and colour. In a short time, however, he betook himself to London, and, in 1822, was engaged with his friend Stanfield in painting scenes for Drury Lane Theatre. It would be difficult, perhaps, to detect any traces of this early discipline in the later works of the two Academicians, but it is probable that their attention was thus directed to a practical study of proportion and the multiplication of details, with a view to producing effects of height, size, and distance, and of how to distribute arbitrary masses of colour. In architecture the element of grandeur is

indispensable ; and whether or not from any similarity in one of the aims of this greatest of the arts to those of the humble occupation he had been following, it is certain that to architectural delineation David Roberts devoted his whole powers, and to this result his by no means inferior skill in landscape and figure sketching was always made subordinate.

In the year 1824 the Society of British Artists was formed by a number of painters, some of them young and ambitious, others probably disappointed or annoyed at the exclusiveness of the Royal Academy. Amongst the first subscribers of twenty guineas each, are to be found John Wilson, W. Linton, Maliphant, P. Nasmyth, C. Heath, Clarkson Stanfield, and David Roberts. The names of Heaphy, John Martin, Burnet, and Noble, are also amongst the first members. For some period David Roberts was Vice-President of this Society.

In the exhibition of 1824 we find three works by him, a 'View of Dryburgh Abbey, Roxburghshire,' the 'East Front of Melrose Abbey,' and the 'South Transept of Melrose.' In the following year, views from Dieppe and Rouen are exhibited.

In 1826, there are evidences of an intermediate visit to Paris, and besides the View of the Interior of the 'Pantheon or Church of St. Geneviève,' at the British Artists, there also appears in this year the first exhibited work at the Royal Academy, a 'View of Rouen Cathedral.'

For eight years subsequently there was only one picture (in 1830) at the Academy ; but the name of David Roberts appears regularly at the British Artists, and the locality of the scenes depicted gives some clue to the districts traversed in the pursuit of his favourite study. In 1828 we find views at Abbeville and Mechlin. In 1829 appeared a picture on an exceptional subject, 'The Departure of the Israelites out of the Land of Egypt.' This well-known and powerful effort of composition was painted for Lord Northwick, one of the artist's earliest patrons, and was purchased by the late Sir R. Peel. In this year also is a trace of the study of Hindoo architecture in a painting of the Ellora Cave, from a sketch by Captain Grindlay. In 1830 views appear of Caen, Rouen, Terre-le-mont, St. Andrew's, and again a Hindoo study ; and in 1831 as many as eight pictures, one a group of four small paintings from studies in England and Scotland, at Rotterdam, and Oberwesel on the Rhine. A 'View of the Palace of

Massa, Portugal,' from a sketch by Charles Landseer, may also be noticed.

The next year is a blank, which may be set down to absence on a tour in Spain; for in 1834 we find recorded at the British Artists, a view of 'The Geralda, Seville,' painted at Seville; and in the next year the artist again made his appearance at the Academy with his 'Cathedral of Burgos,' a picture which established his reputation. This work was, with instinctive appreciation, immediately acquired by Mr. Vernon, and now forms part of the National Collection. David Roberts now ceased to be a member of the Society of British Artists, and only on one occasion afterwards, in 1836, exhibited there two views taken at Bordeaux and Bayonne.

Up to the year 1838 one Spanish picture annually appeared at the Academy; and then there is a blank of two years, during which the artist was prosecuting a tour in Egypt, Palestine, and Syria, whence he returned laden with artistic spoils, and was immediately afterwards, in 1839, elected an Associate. The extreme brilliancy of the exhibition of 1840, containing five important works on Eastern subjects, 'The Greek Church of the Nativity, Bethlehem;' 'Gate and Mosque, Grand Cairo;' 'The Dromos at Edfou, Upper Egypt,' 'The Statues of Memnon,' and 'The Remains of the Lesser Temple, Baalbec,' took the admiration of the public by storm, unused as they were to see these scenes of stirring interest treated with so much breadth, grandeur, and spirit, and with such genial warmth of colouring. David Roberts became the Horace Vernet of Great Britain; and in the points in which he has approached the great French artist he has surpassed him.

Consequently in 1841 he exhibited as R.A. elect, and in the same year was elected a full Academician. In that year appeared two well-remembered works, 'Jerusalem from the Mount of Olives,' and 'Ruins of Baalbec' (with Mount Lebanon in the distance).

For many following years a succession of paintings of the same type, averaging four in number, regularly appeared; and the vein seemed inexhaustible. A 'View of the Entrance to the Crypt, Rosslyn Chapel,' in 1843, was purchased by Mr. Sheepshanks, and is now the property of the nation, together with a Spanish scene, 'Old Buildings on the Darro, Granada.'

In 1846 appeared a grand view of 'The Temple of the Sun

at Baalbec,' with a group of camels and oriental figures in front, painted for John Davies, Esq., of Cranbrook Park, Essex, again exhibited at the International display in 1862; and in the following year the same subject, a little varied, was generously presented by the artist to "The Garrick Club," one of whose rooms it still adorns. In 1847 we find a return to Edinburgh, under the title of 'Mine own Romantic Town;' and in 1848 was exhibited the work painted expressly for the Vernon Collection, and now forming part of it, 'The Chancel of St. Paul, Antwerp.' The next exhibition was varied by a production which called forth a great amount of varying criticism, 'The Destruction of Jerusalem by the Romans.' The success of the work as a massive and spirited composition, was indisputable; but, whether or not from want of confidence in its adequacy as representing an historical event, no similar attempt has since appeared.

The years 1850 and 1851 witnessed a repetition of the Eastern and Continental scenes. In 1852 appeared the first of a long series, continued down to this very year, taken from St. Stephen's, Vienna; Venice, also, and Verona from this date begin to figure largely in the artist's compositions. In 1853 was exhibited the picture painted by command of her Majesty, representing the 'Inauguration of the Exhibition of 1851.'

Two years later, one so-called 'panoramic' picture of 'Rome,' of large dimensions, attracted attention alike for its vast detail, as for a brilliant gleam of sunset, lighting up the Alban Mountains. This was followed by a series of views from the same city, produced at intervals, and representing other great historical objects, The Coliseum, Forum, etc., in many of which the same conception is repeated with only slight variations. Architectural subjects, as much as any, are susceptible of being grouped in pairs. Between the 'Christmas Day, St. Peter's,' of 1856, and the 'Fête Day, St. Peter's,' of 1861, there is much of this correspondence. So also the 'Interior of Milan Cathedral,' of the present year, brings vividly to the remembrance the same subject exhibited in 1857; and the 'Baalbec' of 1861 may be compared not only with that of 1846, already referred to, but with several other repetitions in this country.

The only marked addition to the above repertory of subjects in later years are the scenes illustrative of London. A series of seven views taken at different points of the river, has been com-

menced by the artist, of which three were exhibited last year, and the two views in this year's Academy Collection also, we presume, form part. The renderings of St. Paul's have always been particularly happy. This year the dome is seen under two aspects: one looking westward, a bright scene, the other eastward, a dark one.

To pass any eulogy on the works of a painter who is living amongst us, and daily producing pictures which are the admiration of thousands, is plainly superfluous. It may be not out of place, however, to cite a few remarks on David Roberts's style, from Dr. Waagen. "It would not be easy," says the author of the 'Art Treasures,' "to instance another master who has so successfully treated the architecture of different countries, and in more various forms. Besides making himself thoroughly acquainted with the architecture of France, Spain, and the Netherlands, and that of his own country, he has pursued his studies in Egypt and Palestine. His drawings taken in the last-mentioned countries, and lithographed in a masterly way by Haghe, have gained for him a European, and more than a European reputation. The happy choice of position these drawings display, the picturesque conception, the favourable light and shade, and the animated figures introduced,—are sufficient to account for this success. All these qualities are displayed still more favourably in his oil pictures; in addition to which they possess the charm of a powerful, transparent, and harmonious colouring, of the most effective contrasts of local colour, and of a touch which combines freedom with delicacy."

The allusion in the above passage is to that celebrated published volume, without mention of which any record of the artist's life would be incomplete. In 1842-3-4 appeared a folio entitled, 'The Holy Land, Syria, Idumæa, Arabia, Egypt, and Nubia, from drawings made on the spot by David Roberts, R.A., with historical descriptions by the Rev. George Croly, LL.D.; lithographed by L. Haghe.'

This magnificent collection of 246 subjects, of the size of the original drawings, is that by which, mainly, the fame of the artist has been extended to all quarters of the globe. It is one of the largest works of its class in existence, and in the descriptive portions contains many extracts from the artist's journal, describing the experiences of his companions and himself. In addition to the

above, several illustrated works have appeared. At intervals from 1847 to 1854, 'Scotland Delineated in a Series of Views,' in lithograph by Harding and others, from designs by some twelve leading artists, including D. Roberts, was issued in large folio. In 1859 appeared 'Italy,—Classical, Historical, and Picturesque,—Illustrated in a Series of Views from Drawings,' by Stanfield, Roberts, Harding, Prout, Leitch, Brockedon, and others; also 'The Waverley Album,' illustrated with engravings from his designs amongst others. To this may be added the 'Album of Scottish Scenery,' published in 1860; Bulwer's 'Pilgrims of the Rhine' has been published also with illustrations from the same hand; and designs for several volumes of 'The Landscape Annual' were furnished by the artist.

A forcible proof of the value which is set upon David Roberts's works was furnished by the sale of Mr. Bicknell's collection, which took place in May of this year. Mr. Bicknell was connected with the artist by the marriage of their children, and had secured the following and other choice specimens of the works executed from about 1834 to 1844. The following list, taken from the 'Athenæum' of May 16, p. 651, states the prices realized for seven of the more important works, as compared with their original cost:—

	Cost	Sold for
1. Interior of Church of St. Miguel, Xeres de Frontera }	£105 . .	£598 10 0
2. Tyre	150 . .	367 10 0
3. Sidon	156 . .	378 0 0
4. Street in Cairo	50 . .	530 5 0
5. Melrose Abbey	40 . .	273 0 0
6. Interior of St. Gomar, Lierre . .	300 . .	1,438 10 0
7. Ruins of Baalbec	250 . .	787 10 0
	<hr/>	<hr/>
	£1051	£4,373 5 0

These figures speak for themselves, and describe more convincingly than words the estimation in which these masterly productions are held. In the name and works of David Roberts, not merely the Royal Academy, but the Fine Arts of Great Britain, possess one of their most admired expositors, and most brilliant ornaments.



THE REV. WILLIAM WHEWELL, D.D., F.R.S.,
 MASTER OF TRINITY COLLEGE, CAMBRIDGE.

WILLIAM WHEWELL was born in the city of Lancaster, on the 24th of May, 1794. Of the training to which he was subjected during his early youth, we know little. It is, however, certain that it was of that well-ordered nature, which ensures healthful and vigorous physical development, and which encourages the growth of masculine mental powers, while at the same time it regulates and refines them.

The varied works which have emanated from the subject of this memoir, prove the intimate connection of a mind constantly quickened by the impulses of intellectual force, and a body capable of being stirred, through every nerve, into activity, and fitted to endure long-continued and arduous labours without wearying.

There are but few men who have the power of dealing with equal facility with the hard facts of mathematics, the close inductive processes of experimental science, the charms of "divine philosophy," and the wild wingings of fancy over the realms of poetry.

The earliest labours of Mr. Whewell are found in useful manuals of 'Statics and Dynamics,' and in a 'Mechanical Euclid,' which has compelled the approval of even the German mathematicians. An 'Elementary Treatise on Mechanics' (1819), 'On the Free Motion of Points and on Universal Gravitation' (1832), and 'The First Principles of Mechanics,' published in the same year, are valuable contributions to our knowledge of Motion and Force. The sciences of mineralogy and chemistry were next the objects of his profound study, which resulted in the 'History and Philosophy of Inductive Science;' while the leisure of a busy life could find repose and pleasure in translating the 'Hermann and

Dorothea' of Goethe, and in pouring forth the luxuriant wealth of his mind in words wedded to verse.

If we examine with care the intellectual world around us, we shall perceive that it is divided between two sets of thinkers, or two schools of philosophy. One of these assumes the existence of innate conceptions,—the reception, or rather the birth, of truth, without the aid of experience;—while the other gives to the mind the highest degree of activity and power, but insists on the acquirement of knowledge, by experience. One school belongs to the followers of Plato, who advanced the powers of the human mind to an almost prophetic condition, and uttered his truths, as it were, with a Divine voice. The other, following in the path which Aristotle trod, collects and groups and systematizes—carefully soliciting Nature to disclose her secrets, and admitting only this kind of sifted evidence in support of truth. On the one hand, the mind thinks out that which is, on the other hand, the result of great labour, in which all the senses are compelled into action.

To the first of these philosophies Dr. Whewell is wedded, and, individually, he has nobly supported its claims to high consideration. In his 'History of the Inductive Sciences' we find a chronological review of the steps of progress in each department of physical inquiry, advancing us steadily towards the high considerations which are involved in the 'Philosophy of the Inductive Sciences.' This work may be regarded as a fine example of the exercise of reason in its pure and proper field; it is a monument of human thought, a record of mental progress, and an indicator of the tract which promises most to the voyager on the ocean of knowledge.

In 1828, Dr. Whewell was named the Professor of Mineralogy at Cambridge; and to complete his knowledge of this department of natural science, he visited Germany. The school of Freyberg attracted his attention, and he studied with assiduity the Cabinet collections of that city, and the mines in its vicinity. The beautiful Mineralogical Museum of Vienna was no less a source of pleasure and instruction to the Cambridge Professor and Tutor. His attention to this division of science led to his election as President of the Geological Society of London in 1836.

In 1830, Dr. Whewell published his opinions 'On a Liberal Education in General, and with particular reference to the leading Studies of the University of Cambridge.' The question of the

value of mathematics, as conducive to the development of the intellectual powers, became shortly after this the subject of eager discussion, into which Dr. Whewell entered in a very able pamphlet, 'Thoughts on the Study of Mathematics as part of a Liberal Education.' In this he contrasts mathematics and logic, and endeavours to establish the high and general importance of the former, by showing its superiority to the latter as a school of practical reasoning. The question proposed is, What is the best instrument for educating men to a full development of the reasoning faculty? and the answer given is, Mathematics—insisting that "mathematics are a means of forming logical habits better than logic itself."

The positions maintained by Dr. Whewell were very warmly contested by the logicians, but by no one with that power—and may we add, passion—which distinguished the reply to this pamphlet by Sir William Hamilton. This did not, of course, pass without a rejoinder from the chivalrous defender of the Cambridge system of education; and it is difficult—now that we can look with calmness on the combatants—to say whether the victory rests with the hero of mathematics, or with him who ever wielded his logical lance with a giant's power.

In 1834, Professor Whewell published his 'Astronomy and Physics considered in their Relations to Natural Theology.' In 1838, he gave the world his great work, 'The History of the Inductive Sciences from the Earliest to the Present Times.' In this book we have the first earnest intimations of a favourable leaning to the philosophy of Kant, and of dissent from the schools of Bacon and Locke. In fact, the history is written mainly to prove that science is not inductive; that we advance in knowledge by "the colligation of facts." "The particular facts are not merely brought together, *but there is a new element added to the combination by the very act of thought by which they are combined*; the facts are known, but they are insulated and unconnected till the discoverer supplies *from his own store* a principle of connection. The pearls are there; but they will not hang together till some one provides the string." The 'History of the Inductive Sciences' should be read with the most thoughtful attention, and the study completed by a no less earnest perusal of the third book of Mill's 'Logic,' which may be regarded as the finest essay on induction in our language.

In 1838, Dr. Whewell was elected Professor of Moral Philosophy in the University of Cambridge; and in the same year we again find him discussing the question of the best means of imparting knowledge, in his pamphlet 'On the Principles of English University Education.'

Supporting his position as Professor of Moral Philosophy, the ever-active mind of Whewell produced 'The Elements of Morality, including Polity' (1845), 'Lectures on Systematic Morality' (1846), and 'Lectures on the History of Moral Philosophy in England.'

The author of 'Logic,' in his chapters on the "Logic of the Moral Sciences," proposed the name of Ethology as signifying the science of character to distinguish it from Psychology, the science of the elementary laws of mind. The former he would regard as a purely deductive science, the latter being, as the author of 'Logic' would express it, a science of observation and experiment. Although Dr. Whewell deals most largely and logically with these two divisions of Moral Science, he treats the study of both as being equally dependent on the deductive powers of the mind rather than its inductive experiences. In this he differs from all those who have followed Locke, and allies himself to the band of earnest thinkers who regard Kant as their master amongst moderns, and Plato as the early prophet of their creed.

The great work of Grotius—'De Jure Belli et Pacis'—was edited by Professor Whewell in 1854, with a translation and copious English notes, which display in a striking manner his encyclopædic knowledge. Previously to the publication of these works, which we have named as having a direct connection with the Chair of Moral Philosophy, the sequel and extension of the 'History' was produced as 'The Philosophy of the Inductive Sciences founded upon their History.' Here it is not possible to give the briefest analysis of this fine effort of thought, which aims—not always, as we think, successfully—to exalt the thinking mind above all the advantages of experience. "Experience," says Dr. Whewell, "must always consist of a limited number of observations; and however numerous these may be, they can show nothing with regard to the infinite number of cases in which the experiment has not been made. . . . Truths can only be known to be general, not universal, if they depend upon experience alone. Experience cannot bestow that universality which she herself cannot have, nor that necessity of which she has no comprehension."

These books have lately been issued in a new and expanded form, and with titles more consistent with the train of thought which pervades them. These are—‘The History of Scientific Ideas,’ ‘Novum Organum Renovatum,’ ‘The Philosophy of Discovery.’ In these works there is one expressed thought, which should take deep root and grow into a sublime tree; but it is unfortunately checked in its development by the luxuriant growth of less ennobling plants. Another one of England’s greatest philosophers says, “Science has scattered her material benefits so lavishly wherever she has been in presence, that no small number of her followers, and all the multitude, have left off gazing on the resplendency of her countenance *in their eager scramble for her gifts.*” Dr. Whewell is not of the multitude. “I have not, therefore, aimed,” he writes, “at imitating Bacon in those parts of his work in which he contemplates the increase of man’s dominion over Nature as the main object of natural philosophy; being fully persuaded that, if Bacon himself had unfolded before him the great theories which have been established since his time, he would have acquiesced in their contemplation, and would readily have proclaimed the real reason for aiming at the knowledge of such truths to be—that they are *true.*”

‘Indications of the Creator’ was an answer given by Dr. Whewell to the humiliating philosophy of the ‘Vestiges of Creation.’ In the ‘Indications’ there are beautiful outbursts of a true religious feeling, interwoven with the thoughts of a philosopher who is making his incursions into the realms of unexplored truth, to gather the evidences which are required to destroy the specious and, as he conceives, dangerous arguments of his opponent. The same spirit which has guided Dr. Whewell in the various philosophical labours to which we have referred, and that unchained, and too often irrepressible fancy, which is ever and anon flashing forth its meteoric beams, reached a culminating point in ‘The Plurality of Worlds.’ This work has always been considered as being from the pen of the Master of Trinity, and the authorship has never been denied. There are internal evidences which appear to us to fix it unmistakably upon him. At the same time we are not disposed to consider the argument of the plurality of worlds as the creed of its author. A giant plays with an idle thought as the ambidextrous conjuror deals with his gilded ball, and he bewilders those who can see only circles of light in its rapid passage

from hand to hand. Upon a premiss of the most unsubstantial character genius has playfully built a superstructure which looks like the temple of the living truth. To use Dr. Whewell's own metaphor, slightly modified, the author of 'The Plurality of Worlds' has spun from a store within itself that thread on which the pearls—produced by wounding the oyster—are strung.

In 1859 Dr. Whewell published 'The Platonic Dialogues for English Readers.' In this work the matter and the manner of the dialogues is given with all fidelity, but numerous prolix and obscure passages are abridged, and this process peculiarly fits the book for those for whom it was intended. Dr. Whewell assures us that this work had been the loved labour of many years.

We have named already a sufficiently varied series of works as the offspring of one human brain. To these we have yet to add 'Architectural Notes on the Churches of Germany,' and a translation of Auerbach's 'Professor's Wife.' Dr. Whewell was also the editor of Butler's Sermons, and of Newton's 'Principia.' At the recent visitation to the Royal Observatory at Greenwich, we were pleased to meet with this philosopher, who, although in his sixty-ninth year, was as vigorous as ever in mind and body. Two remarkable men stood conversing together in the courtyard of the Observatory—Herschel and Whewell—both philosophers of the highest class, and both of them adding to their various and brilliant accomplishments, poetic talent of so high an order, that if they had not become the priests of the muse of science, they would have become the votaries of her more enthusiastic sister. These philosophers, with but two years of difference in their ages, can look back upon the labours of their well-spent lives with serene pleasure. They have won their admission, by different, but by equally acceptable labours to the Eleusinian mysteries, to behold visions of the creation of the universe, and to see the workings of that Divine agency which controls the whole. While looking on those master minds we felt one regret. If, instead of diffusing their giant powers of intellect over the wide fields of science, they had brought their strength to bear on one division of them, how vast would have been the gain to human knowledge!



RICHARD OWEN, M.D., V.P.R.S., D.C.L., F.L.S., ETC.,

SUPERINTENDENT OF THE NATURAL HISTORY DEPARTMENT,
BRITISH MUSEUM.

RICHARD OWEN, the youngest son of Richard Owen, Esq., of Fulmer Place, Bucks., was born at Lancaster, July 20th, 1804. He received his classical and mathematical education at the Grammar School of Lancaster, under the Rev. Jos. Rowley, M.A., and the Rev. John Beethom, M.A., and his scientific education at the University of Edinburgh and the Medical School of St. Bartholomew's Hospital in London.

He matriculated at Edinburgh in 1824, and, besides the professional courses in the university (the third Monro, on anatomy and physiology; Jameson, on natural history; Hope, on chemistry; Alison, on the institutes of medicine, etc.), he attended the lectures on anatomy by Dr. Barclay, and the summer course on comparative anatomy given by the same learned professor at his private school. Here also Mr. Owen heard the first course of lectures delivered by Dr. Robert Knox, who became the successor to Dr. Barclay.

During his studentship at Edinburgh Mr. Owen assisted in founding the "Hunterian Society" for communications and discussions on medical and physiological subjects by students of the university, the professors granting the use of a room for that purpose. Of this Society, which we believe still flourishes, Owen was elected president in 1825. He appears to have gone up for his examination at the Royal College of Surgeons in London soon after his arrival in the metropolis; the date of his membership of the College in the official list being 1826, that of his fellowship, 1843. Mr. Owen commenced private practice as a surgeon in Serle Street, Lincoln's Inn Fields, in 1827, and communicated cases to the Medical Society

of St. Bartholomew's Hospital, of which he was an active member. His first published paper is, "An account of the dissection of the parts concerned in the aneurism, for the cure of which Dr. Stevens tied the internal iliac artery," in the 'Medico-Chirurgical Transactions,' vol. xvi. 1830. Dr. Stevens had transmitted an account of this operation, the first which had been performed on that artery, in 1812, from the island of Santa Cruz, announcing its success. Doubts were entertained, and had been publicly expressed, as to the possibility of reaching so deep-seated an artery. The patient died in 1822. Part of the body was preserved in spirits and brought to England in 1829. "Dr. Stevens," writes Mr. Owen, "at the suggestion of Mr. Lawrence, deposited the preparation in the Museum of the Royal College of Surgeons, and the dissection being entrusted to me, he requested me to communicate the particulars to the Society" (p. 3). The result of this dissection was to demonstrate the fact of the application of the ligature on the internal iliac, and its effect in the obliteration of the aneurism.

It appears that about this time, Mr. Owen, having been dissuaded from entering the medical service of the Navy by Mr. Abernethy, who had appreciated at St. Bartholomew's his attainments and skill as an anatomist, accepted an appointment, through Abernethy's recommendation, in the Museum of the Royal College of Surgeons.

The famous collections of John Hunter, purchased by Parliament in 1799, had been transferred to the Company (afterwards the College) of Surgeons.

The description of the numerous specimens and drawings of the different series,—physiological, pathological, and zoological,—originally undertaken by Sir Everard Home, was finally abandoned by him in 1825: the materials published by him in his "Lectures on Comparative Anatomy" were unavailable for the purposes of a catalogue. Public attention was called to this event by the strictures of the editor of the newly established journal the 'Lancet.' Mr. Clift, the Curator, required the aid of a competent anatomist and zoologist in this undertaking. The first results of the combined labours of Mr. Clift and his young associate were the 'Catalogue of the Pathological Specimens' (two vols., 1830) and the 'Catalogue of Monsters and Malformations' (in 1831).

To determine the species of animals dissected by Hunter constituted the great difficulty of the cataloguing and describing, and

Owen, who had acquired a knowledge of the principles of zoology at Edinburgh, now resumed that study in amicable association with the eminent author of 'Zoological Recreations,' William Broderip, whose guidance at this important period of his life is gratefully acknowledged in Mr. Owen's work, 'On the Archetype and Homologies of the Vertebrate Skeleton.' The 'Catalogue of the Specimens of Natural History in Spirit,' 4to, 1830, was the earliest produce of this resumption of zoological studies.

All such expositions of the contents of public museums make known their needs, and stimulate to the supply of the missing links in the series. The living type of the great extinct group of chambered shells, *e. g.* Ammonites, etc., had long been a desideratum in natural history. The animal of the *Nautilus pompilius* was transmitted from the Pacific by a fellow-student of Owen, Mr. George Bennett, F.L.S., and presented to the Museum of the College. It was anatomized by Owen, and formed the subject of his first Memoir in Comparative Anatomy. The Board of Curators, in the advertisement to this work, which was published at the expense of the College (4to, 1832), refer to its author as "a gentleman engaged under their authority in preparing a descriptive catalogue of the anatomical preparations in the gallery of the Museum."

On the appearance of this memoir, it was translated into French by Milne-Edwards, and into German by Oken. In it the author enters, in a way characteristic of subsequent memoirs, into collateral questions on which the new facts throw light; he modifies the Cuvierian classification of *Cephalopoda*, based on characters of the shell, and proposed, on anatomical grounds, the orders *Dibranchiata* and *Tetrabranchiata*, which have been accepted.

Owen now appears to be fully engaged with his first great work, the 'Descriptive and Illustrated Catalogue of the Physiological Series of Comparative Anatomy,' of the Hunterian Collection, which then occupied the gallery of the single museum in Lincoln's Inn Fields.

The nature of the task is clearly explained in the author's quiet, business-like preface. Of the thousands of specimens and numerous drawings of animal and vegetable organs left by JOHN HUNTER, scarcely one had a record of the species from which it had been derived. Owen saw in the recently-organized "Zoological Society of London," the important aid which the dissection of the animals dying in their menagerie would afford him in his task.

He became a life-member in 1830, was soon elected on the council, and took an active share with the then Secretary, Mr. Vigors, the Vice-Secretary, Mr. Ed. Bennett, Messrs. Yarrell and T. Bell, in the establishment of the evening meetings for the purely scientific aims of the Society, and the prompt publication of the facts communicated. These originally appeared as the 'Proceedings of the Committee of Science' in 1830, Owen's "Anatomy of the Orangutan" forming part of the first volume. They took the title of 'Proceedings of the Zoological Society of London' in 1833, and have since appeared with exemplary regularity. Their value in the progress of Natural History science is appreciated by all its cultivators. A large proportion of Owen's zootomical researches is to be found in these volumes; the more important of which appear, with their illustrations, in the 'Transactions,' established in 1835. By the application of the facts thus accumulated, and the knowledge acquired by an extensive range of reading, the first volume of the catalogue, containing the preparations of the organs of motion and digestion, was completed and published in 1833. This was followed by a second, including the absorbent, circulating, respiratory, and urinary systems, in 1834; and in 1836 by a third, containing the nervous system, organs of sense, and connective and tegumentary systems and peculiarities. The series relative to the generation and development of animals, the most extensive and extraordinary in the whole museum, formed the two concluding volumes of the 'Descriptive and Illustrated Catalogue,' which was completed in 1840, the Council of the College acknowledging their "great gratification" at these results of "the unremitting labour which had been for many years bestowed on this work by Mr. Owen, one of the conservators, and now Hunterian Professor of Comparative Anatomy and Physiology to the College."

As a lecturer, Owen commenced his career at the Medical School of St. Bartholomew's Hospital, where he was appointed to the Chair of Comparative Anatomy in 1834. In the published syllabus of the course of lectures delivered in 1835, first appeared his proposed subdivision of the Zoophytes of Cuvier into the two provinces or subkingdoms *Aerita* and *Nematoneura*, the first characterized by "frequent repetition of the same organ in the same individual; no distinct respiratory system; no abdominal cavity," etc., as contradistinguished from "alimentary tubes separated from the parietes of the body, and contained in an abdominal cavity; a

circulation in vessels and respiratory organs," which are amongst the characters of the *Nematoneura*. Rymer Jones, Arthur Farre, and White Cooper, were amongst the pupils attending this course.

In 1835, Owen married the only daughter of his friend and coadjutor, William Clift, Esq., F.R.S. In 1836 he became F.R.S., and was elected, on the retirement of Sir Charles Bell, to the Professorship of Anatomy and Physiology in the College of Surgeons. Parliament, in the purchase and transfer of the Hunterian Museum to the College, had stipulated that its contents should be illustrated in a course of twenty-four lectures. These had previously been divided between the Collegiate Professors of Anatomy and of Surgery. The College had now a man able and willing to grapple with the whole extent of zootomical science, and the stipulated number of lectures was assigned to Owen, with the title of "Hunterian Professor." He continued the useful practice of printing a 'Synopsis' of each course; and those who may have preserved the complete series of these summaries, as they were issued year by year, have the means of estimating the extent of scientific information communicated in the theatre of the College to the Fellows, Members, and privileged Visitors receiving tickets from the Council. In the Introductory Lecture to the last course delivered by Owen as Hunterian Professor, in 1855, he briefly alludes to the different aspects under which anatomy, properly so called, had been presented to his audience. First, as in the Hunterian physiological series, according to the organ, each organ or system of organs being successively reviewed and traced from its most simple to its most complex conditions. Second, each organ traced through the progressive stages of its development in the embryo of the several classes of animals. Third, the structure of the animal considered in its totality, and the zoological series anatomically described from the lowest to the highest species. Two courses of lectures were devoted to the skeletons or hard parts of animals, considered especially in their relations to "philosophical," or what Owen preferred to call "homological anatomy." At length, "having never deemed it the privilege of the Hunterian Professor to repose upon the repetition of the same annual course of lectures, with the mere addition of the chief discoveries of the preceding year,"* Owen entered upon the course of lectures devoted to the

* 'Introductory Lecture to the Course on Palæontology,' appended to 'Hunter's Essays and Observations,' vol. i. p. 284.

“Organization and Affinities of the Extinct Species of Animals.” In the introductory lectures to this course, Owen made known, for the first time, the true position of Hunter in the ‘History of Geology and Palæontology.’* Early in the following year Owen received his appointment as Superintendent of the Natural History Department in the British Museum, and resigned his Professorship and Curatorship in the Royal College of Surgeons. He had, indeed, completed the series of labours by which the Hunterian collections of specimens and drawings were rendered available to the students of physiology, zoology, and palæontology; his proper work at the College was done; and, in that sphere, his services to his country. If the Hunterian collections were worth £30,000 without a catalogue, what was now their value!

We resume the dates of the catalogues. The first volume of the ‘Palæontological Catalogue,’ containing descriptions of the Fossil *Mammalia* and *Aves*, appeared in 4to, with plates, in 1845. Concurrently with these, the catalogues of the recent osteology were proceeded with. These appeared in two 4to volumes of 914 pages of mostly small print, descriptive of 5906 specimens, in 1853. The second volume of the Palæontology, including the fossil *Reptilia* and *Pisces*, was published in 1854. In the meanwhile, a second edition of the first volume of the ‘Physiological Catalogue’ had been called for, and was published, at Professor Owen’s suggestion, in the more convenient form of 8vo, in 1852, containing descriptions of numerous additional specimens. The convenience of the public had been consulted by the compilation of a general ‘Synopsis of the Contents and Arrangement of the Museum,’ of which the second edition, 8vo, from Owen’s pen, appeared in 1850. In the interests of the Museum and the convenience of voyagers, he drew up a volume of ‘Directions for Collecting and Preserving Animals and Parts of Animals,’ published by the College in 1835.

All these works, with the stimulus of the Hunterian Lectures, led to a rapid and ever-increasing ratio of acquisitions, chiefly by donations to the museum. As the curator of a public museum, Owen had from the first foregone every opportunity to form a private collection. Every specimen, of whatever rarity or value, and under whatever circumstances pressed upon him, as a mark of personal regard or as a return for information imparted, he invariably

* These lectures are given in the first volume of the ‘Essays and Observations, etc., of John Hunter.’ 8vo, 2 vols. Van Voorst.

declined, save on the conditions of permission to transfer the gift to some public museum. All that were suitable as additions to the Hunterian collection were presented to the College. In 1845, the strain of labour producing its effects, Owen availed himself of the exceptional privilege of eight weeks' vacation to visit Italy. He accompanied Robert Brown and the Baron von Buch to Naples, to the meeting of Italian Naturalists held there in that year, and visited the principal cities and museums of Italy. He was everywhere received with marked distinction. At Rome he was the guest of Prince Charles Lucien Bonaparte, at the Palazzo Bonaparte, at that period containing the Natural History collections of the distinguished author of the 'Fauna Italica.' At Florence, Professor Owen was the guest of the Grand Duke, who desired him to select any subject or series of specimens of wax-models from the laboratory for which Florence has long been famous, and which was then presided over by the accomplished anatomist and artist Signor Luigi Calamai. Professor Owen signified his preference for the series illustrating the anatomy of the Torpedo; and at the same time intimated his wish that they should be donations to the museum of the College, explaining the principle on which he had refrained from commencing any private collection. The Grand Duke graciously acceded thus far, that the donation being intended as a mark of esteem for the Professor, he was to regard them as a gift to himself, with liberty to transfer the specimens as his own donation, if he thought them suitable, to the Museum of the College of Surgeons. On the arrival of this beautiful series of wax-models, Professor Owen accordingly presented them to the College.

The original museum in which Owen commenced his labours at the College, in 1828, was a single, rather heavily ornamented, and not well-lit apartment, with one gallery. In 1835 a more spacious and better-lit hall, with two galleries, designed by Mr., afterwards Sir C. Barry, was substituted for it; to this were added a second, similar but smaller hall; and a third, larger hall; the whole museum, at the conclusion of Owen's curatorship, in 1856, affording at least ten times the amount of exhibition space, and every portion of it well filled.

The proportion of Mr. Owen's labours devoted to the elucidation of those of his great precursor John Hunter, will ever constitute an element in the estimate of his character. There are

few examples in the history of science of the devotion of so much labour, by an original investigator, and not a mere commentator, to the reputation of a predecessor.

Some of Hunter's published papers had been collected in his lifetime from the Philosophical Transactions to constitute the work entitled 'Observations on certain parts of the Animal Economy,' 4to, 1786. Professor Owen added to these papers every other on cognate subjects that Hunter had published, or sanctioned the publication of, during his lifetime, together with the "Croonian Lectures" which had been read before the Royal Society from 1776 to 1782, and brought them out in an octavo edition. The 'Animal Economy' thus enlarged, with a preface descriptive of Hunter's real discoveries, which had been more or less misunderstood or overlooked by previous commentators, was published in 1837. The evidence given by Mr. Clift before the Parliamentary Committee on Medical Education had revealed the fact that, during the period between the demise of Hunter (of whom Clift was the last articulated apprentice or pupil) in 1793, and the purchase of the "Collection" in 1799, he had availed himself of the manuscripts remaining with the museum in his care, to copy portions of them for his instruction. The portions selected being chiefly those on comparative anatomy and physiology, removed by Home in 1800, and afterwards destroyed. Certain extracts from these copies were communicated by Clift to Owen during the formation of the Physiological Catalogue, and added, by Mr. Clift's permission, as 'Notes' (vol. iii. p. v. etc.). On the demise of Mr. Clift, these transcripts came into Owen's possession, and he published them in two octavo volumes, entitled 'Essays and Observations on Natural History, Anatomy, etc., by John Hunter' (1861). The labours by which they were prepared for press are briefly detailed in the preface. The original copies by Clift were deposited by Owen in the library of the Royal College of Surgeons; and in the dedication of this work "to the Fellows and Members of the Royal College of Surgeons in England," Owen speaks of it as "the last of his labours in making known the thoughts and works of the founder of Philosophical Surgery."

The more congenial labour of comparing the Hunterian preparations with recent dissections, chiefly of exotic animals supplied by the Zoological Society, is at once the key to the secret of Owen's attainment of such profound knowledge of comparative

anatomy, and the reason why most of his papers have appeared in the Transactions of that Society; while the dissection of so many animals enabled him to enrich the Hunterian series with many contributions, supplying defective links or affording further valuable demonstrations.

The first paper communicated by Mr. Owen to the Royal Society was on the mammary glands of that strange duck-billed quadruped the *Ornithorhynchus paradoxus*; it was published in the Philosophical Transactions in 1832. This was followed by another, on the ova of the same animal, in 1834.

Some discussion with the famous Geoffroy St. Hilaire, who maintained the oviparity and non-mammiferous nature of the *Ornithorhynchus*, ensued. But Owen's inference from the structure of the ovisac, of the corpus luteum and of the uterine ovum, that the latter must be developed *in utero*, and the young be born alive, has been adopted in physiology. He was elected "Corresponding Member" of the Academy of Sciences, Institute of France. The problem still remained how a quadruped, with a beak like a duck, and without a nipple, could suck. In 1834 Professor Owen received specimens of apparently new-born *Ornithorhynchi*, which he minutely described in a paper printed in the 'Transactions of the Zoological Society.' The beak was soft and short, the mouth adapted to be applied to the areola on which the milk-ducts terminate, and to receive the milk that would be injected into the mouth by a muscle surrounding the large mammary gland. Professor Owen's next step was to settle the questions undecided on the generation of the marsupial animals, viz. the period of uterine gestation, the exact condition of the new-born young, the mode of its passage to the external pouch, and the term of its suspension there. For this purpose he took advantage of the collection of kangaroos, then living at the establishment of the Zoological Society at Kingston; the impregnated females being transferred, for better observation, to the gardens in Regent's Park.

The account of these experiments is contained in the Philosophical Transactions for 1834. It is to these investigations we owe the knowledge of the state of the new-born kangaroo (*Macropus major*). But an inch long, naked and blind, with hind legs shorter than its fore legs, the very reverse of the adult, it is transferred, after thirty-eight days' gestation, by its mother's lips to her nipple within her pouch, where it clings and hangs for a period of

six months, afterwards using the pouch only for shelter, and occasionally feeding.

In the Philosophical Transactions for 1837, the memoir on the brain of the Marsupialia was published, recording the absence of the corpus callosum. This was followed by the articles "Monotremata" and "Marsupialia" in the 'Cyclopædia of Anatomy and Physiology,' showing, among other characteristics, a similar cerebral structure in the Ornithorhynchus and Echidna. Two papers in the Zoological Transactions, "On the Osteology" and "On the Classification of the Marsupialia," completed the grounds for forming a primary group or subclass of the Marsupial and Monotrematous Mammals, for which the names *Implacentalia* or *Lyencephala* were proposed.

Pursuing his researches into the correlations of the cerebral with other systems of organs in the mammalia, Professor Owen was led to associate the Cuvierian orders or tribes, *Edentata*, *Rodentia*, *Insectivora*, and *Cheiroptera*, into a second "subclass" called *Lissancephala*, from the smooth unconvoluted character of the cerebrum. The *Cetacea*, *Pachydermata*, *Ruminantia*, *Carnivora*, *Quadrumana* form a third subclass—*Gyrencephala*, or with convoluted brains. The superior development of the human cerebrum, zoologically marked by its extension over and beyond the cerebellum with concomitant structures in the posterior lobe, called in human anatomy "hippocampus minor," etc. afforded the characters of a fourth equivalent group in the classification on the brain-system, which is called "*Archencephala*." Cuvier, pointing to the "feet" as fitted for erect stature, and "hands" for perfect manipulation, affirmed them to be peculiar to man, and founded thereon the order *Bimana*. But modified homologues or rudiments of the thumb, great-toe, hinder lobe of the cerebrum, etc., occur in certain species of the lower group approximating the higher one; to the objection to his cerebral classification that some of the highest *Gyrencephala* possessed what might be called rudiments of a "hippocampus," etc., Professor Owen replied by contrasting those parts as they existed in the gorilla, chimpanzee, etc., and in the human subject. It was as absurd to suppose that he denied the existence of the parts which Tiedemann, Vrolik, and Kuhl had pointed out, as that Cuvier denied the existence of the homologue of the great toe in the orang. The graduation of structures in the chain of living beings affords similar grounds of

attack against all systems of classification, which, nevertheless, are indispensable to the comprehension of the science of animals and plants.

In 1847 Professor Owen published the facts and reasons for a re-distribution of the Pachydermata and Ruminantia of Cuvier into the Ungulata with hoofs in equal number (*Artiodactyla*), and into those with hoofs in unequal number (*Perissodactyla*). The Artiodactyles were subdivided into ruminants and non-ruminants, numerous extinct species being shown to have filled up the intervals that now exist; while in like manner the Horse tribe, the Solipedes of Cuvier, were shown to be more closely allied to the tapir and rhinoceros by other intermediate Perissodactyles of geological ages than would appear by the examination of living species only.

In regard to the Quadrumanous family, which makes the nearest approach to man, but little was known, and that imperfectly, at the close of Cuvier's labours. The orang-utan was placed at the head of the order, and both this and the chimpanzee were known to the great naturalist only in their immature condition. The osteological and dental characters of the adults of both forms were made known by Owen in a series of memoirs in the Zoological Transactions for 1835 and 1836, proving that the chief characters supposed to approximate these animals to man are transitory, and peculiar to the young state of the animal with deciduous teeth. The chimpanzee is placed above the orang; both are characterized in the adult state by a sexual distinction in the teeth. A smaller species of Bornean orang (*Pithecus Morio*) is defined: the larger one (*Pithecus Wurmbii*) had been supposed, from its huge canines and low facial angle, to be a baboon.

In 1847 Professor Owen's opinion was sought by an American missionary at the Gaboon, as to the skull of a large baboon-like quadrumane, of which Dr. Savage transmitted a drawing: in this was recognized a new species allied to the chimpanzee. It was described by Dr. Savage under the name of the "Gorilla," which name Professor Owen adopted, though aware of the improbability of its being the ape so called by Hanno. In a series of elaborate memoirs in the Zoological Transactions and Proceedings, from 1848 to 1862, the osteology, dentition, with the external and other characters of the gorilla, are described by Owen, and compared with the chimpanzee, Papuan, and Negro. Our anatomist con-

cludes, in opposition to Professors Isidore Geoffroy St. Hilaire and Wyman, that the gorilla ranks above the chimpanzee. The rich collection brought to London by M. du Chaillu illustrated the characters of the female and young of the gorilla; and through Professor Owen's consistent support and advocacy of M. du Chaillu, the striking and instructive specimens of this rarest and most interesting of brute-beasts, have been secured for the British Museum, where they are now displayed.

With regard to the class of Birds, we may refer to Owen's monograph on the anatomy of the Toucan in Mr. Gould's work on the *Ramphastidæ*, to the paper on the anatomy of the Hornbill (*Buceros*) in the Zoological Transactions, vol. i., and to the two elaborate monographs on the anatomy of the *Apteryx* in the same Transactions. The incidental notices of the organization of the larger struthious birds in the comparative part of these papers, and above all the accessions to the same wingless order which we owe to the discoverer of the *Dinornis* and *Palapteryx*, supplied the grounds for separating from the Grallæ, or order Echassiers of Cuvier, the species that therein form the family "Brevipennes." Other modifications of the Cuvierian system, and an inquiry into the grounds for a binary division of the class, according to the condition of the newly-hatched young, e.g. into *Aves altrices* and *Aves præcoces*, will be found in the elaborate article *Aves*, communicated to the Cyclopædia of Anatomy and Physiology, in 1836.

Perhaps none of Professor Owen's researches on fossil remains have excited more general interest than those to which we are indebted for a knowledge of the gigantic struthious birds of New Zealand, the first paper on which, entitled "Notice of the Fragment of a Femur of a Gigantic Bird of New Zealand," read November, 1839, was published in the first part of the third volume of the Zoological Transactions. In this paper the author concludes, "that there existed, and perhaps still exists,* in those distant islands, a race of struthious birds of more colossal stature than the ostrich or any other known species;" and so confident was Professor Owen of the soundness of his inductions, that he boldly added, "so far as my skill in interpreting an osseous fragment may be credited, I am willing to risk the reputation for it on this statement." Ample confirmation came to hand in 1843, and has continued to arrive.

* We trust Mr. Frank Buckland's zeal may be rewarded by the ample fulfilment of this prediction.

Six or seven successive monographs have been devoted to the restoration of species of *Dinornis*, *Palapteryx*, *Notornis*, *Aptornis*, and other extinct birds of New Zealand. The Museum of the College of Surgeons is enriched by a restoration of the *Dinornis giganteus*; that of the British Museum by the reconstituted skeleton of *Dinornis elephantopus*, perhaps the most remarkable of all these feathered giants.

In palæontology Owen's labours have not been less important than in anatomy and zoology. In 1842 he communicated his first Report on British Fossil Mammalia, and his second and concluding Report on the same class of extinct animals; both at the instance, and with the aid of grants, of the British Association for the Advancement of Science. The matter of these Reports was incorporated with kindred researches, and beautifully illustrated in the 'History of British Fossil Mammalia and Birds,' 8vo, 1846. The *Coryphodon* there indicated by a small fragment brought up from a deep well sunk in the London clay, at Camberwell, has now been almost wholly restored by fossils from the older eocene of France; but this fragment included an entire tooth. Cuvier required a molar tooth, or a characteristic bone with the articular surface complete, as the basis of his restorations, which at the time appeared so marvellous. When the fragmentary fossil relics brought from Buenos Ayres by Darwin in Admiral Fitzroy's Expedition in 1837, were confided to Professor Owen, not having in many instances the requisite Cuiverian essentials, he brought the microscope to bear upon the portions of teeth, and by the characteristic modifications of the internal structure of seemingly valueless fragments, obtained the knowledge which his great predecessor could only predict from a perfect specimen. In the attempt to reconstruct these fragmentary South American fossils, in some cases Mr. Owen had not even fragments of teeth to build upon, nor a bone with the articular extremities. He then resorted to the grooves channelled in the bone by blood-vessels, or the perforations by nerves, and other previously neglected or unthought-of means, which were attended with paramount success. In this way he recognized the affinity to the llama of the long-necked, giraffe-like fossil *Macrauchenia* from a few neck-bones found petrified on the cliffs of the barren shores of Patagonia; and made out almost entirely from a study of the nerve-canals in a single fragment of a skull, the extinct *Glossotherium*. Unsuspected affinities of

Rodentia to *Ungulata* were brought out in the restoration of the *Toxodon*; but perhaps the most important principle laid down in the volume on the 'Fossil Mammalia of the Voyage of the Beagle,' 4to, 1838, was the conformity of the types of extinct with those of the existing mammalia characterizing the South American continent.

About the same time an analogous collection of fossil remains were submitted to Owen by Colonel Sir Thomas Mitchell, from bone-caves and freshwater deposits of Australia: these were described in an Appendix to Sir Thomas's 'Three Expeditions to New South Wales.' In it the genus *Diprotodon* was founded on a single fragment of an incisor-tooth. To this gigantic marsupial Owen shortly after added the *Nototherium*, *Phylacoleo*, *Phascolumys gigas*, etc. Summing up the whole of his discoveries in this field, and their general bearings in his "Report on the Extinct Mammals of Australia, and on the Geographical Distribution of Pliocene and Post-pliocene Mammals in general," communicated to the British Association in 1844.

It would be too long to cite even the titles of the numerous papers, reports, and works in which the results of Owen's researches into the mammalian and reptilian classes of fossils are recorded. We may allude to close observation and reasoning by which the mammalian characters of the oolitic Amphitheria and Phascolotheria, and of the supposed Neocomian *Basilosaurus*, were established in the sixth volume of the 'Transactions of the Geological Society,' 2nd series; to the elimination of the parts of the *Glyptodon* from those of the *Megatherium*, with which they had been confounded; to the reconstruction of *Glyptodon* and *Mylodon* now the ornaments of the Museum of the College of Surgeons; and to the illustrations of the adaptation of the skeleton of *Mylodon* and *Megatherium* to the task of uprooting trees, fully developed by Owen in his 'Memoir on the Mylodon,' 4to, 1842, and the grandly illustrated work on the *Megatherium*, finally completed and issued in 1862, 4to.

The results of a general survey of all accessible specimens of British fossil reptilia appeared in two Reports, communicated to, and published by, the British Association; the first in their volume for 1839, the second in that for 1842. The matter of these Reports, and of subsequent discoveries, has been methodized into a systematic 'History of British Fossil Reptiles,' of which six parts

have been issued, in quarto, pp. 274, illustrated by 125 plates : we trust the author may be spared to bring this great work to a conclusion.

The curious edentulous reptile, the *Rhynchosaurus*, is described in the Transactions of the Philosophical Society of Cambridge. The allied but still more extraordinary Dicynodonts and Oudenodonts of South Africa were described in the Geological Transactions and Proceedings. These carry the Saurian grade of structure as far back as the Triassic series. In the Keuper of Germany, fossils had been found which were referred to a genus *Mastodonsaurus* ; and in the older coal-deposits other remains, on which the genus *Archegosaurus* was founded. Owen, applying the microscope to the structure of the teeth, obtained very striking results, which, with other characters, led him to refer the supposed Saurians to a lower type of reptiles, more nearly akin to the Batrachia, but with affinities to sauroid fishes and saurian reptiles. More decisive batrachian characters were pointed out in the reptile from the coal-deposits of Nova Scotia, which he called *Dendropereton*. The Labyrinthodont type was shown in the *Baphetes* of the Picton coal, and in the *Parabatrachus* of the Scotch Carboniferous series. In the class of Fishes he has added improvements, both on the old system of Cuvier as also to the more recent one of classification by scales, proposed by Agassiz chiefly for simplifying the study of the imperfect remains of fossil fishes. The entire range of researches on extinct animal species has been condensed and summarized in Owen's work on 'Palæontology,' of which two editions have appeared. (8vo : Black, 1860 and 1861.)

So inseparably interlinked have living and fossil forms been in the labours of Professor Owen, that it would be impossible to regard him in a separate light either as an anatomist or a palæontologist, for we cannot fail of speaking of him as both in the very same breath. Neither can we follow his labours in order of time, nor of subject. To-day he is investigating "parthenogenesis," to-morrow the "nature of limbs ;" on one occasion he is demonstrating the existence of entophyta, or parasitic plants, as well as entozoa in the bodies of animals ; at another, defining the footprints of fossil animals, and assigning them to the various classes of animals that made them. The paper on the *Protichnites*, in the Quarterly Journal of the Geological Society vol. viii. (1852), is a good example of his mode of work in this very difficult line of interpretation.

Owen's discovery, in 1835, of the most extraordinary of human entozoa, the *Trichina spiralis*, infesting the muscles of the human body in such vast numbers as to produce sometimes cases of violent death in the midst of apparent health; his observations of the "blood-disks" which he published in the 'Medical Gazette,' in 1839, with other analogous investigations,—impressed him deeply with the value of the microscope for anatomical and physiological researches. Other branches of microscopical study being carried on about this time by Farre, Bowerbank, Busk, and a few other observers, a "Microscopical Society" was formed in 1840, of which Professor Owen was the first President; its proceedings being published under the title of the 'Microscopical Journal and Structural Record,' the first paper in which was by himself, "On the Structure of Fossil Teeth from the Central Division of the Old Red Sandstone, indicative of a new Genus of Fishes—Dendrodus."

His study of the microscopic structure of teeth was carried on in a laborious, searching, critical spirit, unsurpassed in any special investigation by any naturalist whatever. He was led to it by receiving from Mr. Darwin fragments of the teeth of the extinct megatherium and other animals from South America, in an incipient state of decomposition, when he was struck with the fact that instead of their being resolved, like the fossil tusks of the mastodon and mammoth, into parallel superimposed conical lamellæ, they separated into fine fibres arranged at right angles to the plane of the layers. From this he went on to examine the differences in the microscopical structure in the teeth of every class of animals,—fish, reptiles, mammals; the result being the production of a book unique for amount, completeness, and value of research, and beauty and correctness of illustrations: his 'Odontography,' in 1840–45, consisting of two thick quarto volumes of 650 pages and 168 most exquisitely executed plates.

Owen became a Fellow of the Geological Society in 1836, and the "Wollaston Medal" was awarded to him in 1838.

In 1844 he received the Royal Medal from the Royal Society for his admirable description of certain Belemnites preserved with a great proportion of their soft parts in the Oxford clay.

No fossil shell had given rise to more conflicting opinions as to the affinities of its construction than the Belemnite. The application of the principles of physiological correlations had indicated its general relationship with the cuttle-fishes; but the speci-

mens from Christian-Malford, in Wiltshire, presented to the College of Surgeons by the Marquis of Northampton, displayed in a marvellous manner such traces of those soft and perishable parts so essential to determining the true nature of its living form, as to permit no longer any doubt of the nature and character of the animals to which they belonged; and the uncinated arms, the tentacles with their numerous hooklets, the muscular tunic of the mantle, the expiratory tube, the ink-bag and duct, the lining membrane of the stomach, and all the general details of the anatomy of the fossil Belemnites, were compared in the most complete and convincing manner with the corresponding parts of the recent cuttle-fishes and with those of the *Nautilus pompilius*, first dissected by Mr. Owen in 1831. The *Belemnitidæ*, though possessing the chambered and siphonated shell, were thus shown to belong to the higher, or dibranchiate order of *Cephalopoda*.

As examples of anatomical monographs, we may refer to the memoir 'On the *Lepidosiren annectens*,' and those on the singular and beautiful Sponge (*Euplectella*), in the Linnean Transactions; 'On the Rhinoceros;' 'On the Giraffe;' 'On the Great Anteater;' 'On the Brachiopoda;' 'On the Aye-aye (*Chiromys*),' in the Zoological Transactions; 'On the Development of the Carapace and Plastron of the Chelonia;' 'On the Dentition of the Phacochærus;' 'On the Exogenous Processes of Vertebræ;' and 'On the Placenta of the Elephant,' in the Philosophical Transactions. We cannot, however, attempt to enumerate the many papers that have proceeded from his pen. In the 'Bibliographia Zoologiæ,' published by the Ray Society in 1853, there are recorded upwards of two hundred and thirty of his published productions, and many of these are of the most voluminous and laborious character; and the works that have emanated from him since are not proportionably less in number or importance. His labours have been as varied as numerous, and have extended to every branch of animal life, living and fossil; and it has been justly said of him that, "from the sponge to man, he has thrown new light on every subject he has touched." In this series of untiring and uninterrupted researches, Owen has had steadily in view the higher generalizations of his science. The principle of "vegetative or irrelative repetition," hinted at in his 'Synopsis of the Lectures' in 1835, is fully developed in the volume of 'Lectures on the Invertebrate Animals,' published in 1843. (8vo: Longman; second edition. 1855.)

The President of the Royal Society, in presenting to Professor Owen the Copley Medal, awarded to him in 1851, thus alludes to this most important of Owen's scientific labours :—

“The progress of all sciences is a perpetual struggle after generalizations of a higher and higher order. Anatomy and physiology, so actively cultivated in the time of Cuvier, had afforded at the latter end of his career glimpses of generalizations, which, under the vague terms of ‘unity of organization,’ became subjects of sharp controversy. The idea, so expressed, had two applications,—*one*, to the analogies which exist between the permanent organization of the lower animals, and certain transitory states of the higher species; *the other*, to the correspondences traceable between the parts composing the organization of different species.

“With reference to the first of these applications, I cannot do better than quote the author's own account of his conclusions, as given in the last lecture of his course on the Invertebrate Animals, published in 1843.

“‘The extent to which the resemblance, expressed by the term ‘Unity of Organization,’ may be traced between the higher and lower organized animals, bears an inverse ratio to their approximation to maturity. All animals resemble each other at the earliest period of their development, which commences with the manifestation of the assimilative and fissiparous properties of the polygastric animalcule: the potential germ of the mammal can be compared, in form and vital actions, with the Monad alone, and, at this period, unity of organization may be predicated of the two extremes of the animal kingdom. The germ of the Polype pushes the resemblance further, and acquires the locomotive organs of the Monad—the superficial vibratile cilia—before it takes on its special radiated type. The Acalephe passes through both the Infusorial and Polype stages, and propagates by gemmation, as well as spontaneous fission, before it acquires its mature form and sexual organs. The fulness of the unity of organization which prevails through the Polypes and larval Acalephes, is diminished as the latter acquire maturity and assume their special form.

“‘There is only one animal form which is either permanently or transiently represented throughout the animal kingdom,—it is that of the infusorial Monad.

“‘Other forms are represented less exclusively in the development of the animal kingdom, and may be regarded as secondary forms. These are—the polype, the worm, the tunicary, and the lamprey; they are secondary in relation to the animal kingdom at large, but are primary in respect of the primary divisions or sub-kingdoms.

“Thus the Radiata, after having passed through the Monad stage, enter that of the Polype; many there find their final development; others proceed to be metamorphosed into the Acalphe or the Echinoderm.

“All the *Articulata*, at an early stage of their development, assume the form or condition of the apodal and acephalous worm; some find their mature development at that stage, as the Entozoa: others proceed to acquire annulations; a head; rudimental feet, jointed feet, and finally, wings: radiating in various directions and degrees from the primary or fundamental form of their sub-kingdom.

“The *Mollusca* pass from the condition of the ciliated Monad to that of the shell-less Acephalan, and in like manner either remain to work out the perfections of that stage, or diverge to achieve the development of shells, of a head, of a ventral foot, or of cephalic arms.

“The vertebrated ovum having manifested its monadiform relations by the spontaneous fission, growth, and multiplication of the primordial nucleated cells, next assumes, by their metamorphosis and primary arrangement, the form and condition of the finless cartilaginous fish, from which fundamental form development radiates in as many and diversified directions and extents, and attains more extraordinary heights of complication and perfection than any of the lower secondary types appear to be susceptible of.’

“To the second application of the principle I must more particularly refer, as the subject on which perhaps Professor Owen’s investigations have been more fully and elaborately and systematically carried out, and have exercised a more important and universal influence on these sciences than any other,—I mean the doctrine of Homologies, or the correspondency of parts and of plan in the construction of animals. This had been the subject of close and sharp discussions in the Academy of Sciences between Cuvier and Geoffroy St. Hilaire, which are summed up by the latter in the ‘Principes de Philosophie Zoologique,’ published in 1830; and it can be no matter of surprise, that with an antagonist so strong in his well-founded reputation as a great master in science, and so skilful in applying the weapons of a severe and sarcastic logic, Geoffroy St. Hilaire should have failed to impress the physiological world with those views which Cuvier objected to, as being based upon *à priori* speculation.

“The effect of these discussions may be traced in most of the ablest works on Anatomy and Physiology which subsequently appeared, as, *e. g.* those of Professor John Müller, Professor Wagner, Milne-Edwards, Siebold and Stannius, in Sir Charles Bell’s work ‘On the Hand,’ and in the ‘Outline of the Animal Kingdom’ and ‘Manual of Comparative Anatomy,’ by Professor Jones, of King’s College, London. By all these

authors the principle of unity of organization, as it has been attempted to be illustrated and applied by Geoffroy St. Hilaire, and by the German anatomists of the Transcendental School of Schelling, is tacitly or avowedly abandoned. By M. Agassiz it was directly opposed.

“Nevertheless, the question whether the principle of a common pattern, or the principle of final causes, or, as Cuvier called it, ‘conditions of existence,’—I say, which of these two principles, or in what degree both have governed the development of organization of animals—the greatest question which can occupy the philosophical anatomist—was still far from having been satisfactorily decided.

“It enforced itself upon the most serious consideration of Professor Owen, when he was called upon to prepare the catalogue of the Osteological Collections in the museum of the Royal College of Surgeons; and the results of this consideration were promulgated in his Lectures on Comparative Osteology.

“What those results are, may now be studied in his ‘Report on the Homological Relations of the Skeleton,’ submitted to the British Association at Southampton in 1846; in his ‘Lectures on the Vertebrate Animals,’ 1846; and in his works entitled ‘On the Archetype and Homologies of the Vertebrate Skeleton,’ 1848, and ‘On the Nature of Limbs.’

The President of the Royal Society then quotes the opinions on these works, expressed by Dr. Carpenter in his ‘Principles of Physiology, General and Comparative;’ by Sir Charles Lyell, in his ‘Anniversary Address to the Geological Society, 1850;’ and by Dr. Carus, who, “in the attempt to follow out the homologies of the muscles, on the principles laid down by Professor Owen, acknowledges them as ‘indicating the only true way to the comprehension of a scientific myology.’”

“A great aim of Professor Owen’s works on Homological Anatomy, appears to be to put an end to the old controversy so long maintained, on the assumption that a special adaptation of parts was incompatible with a common type of construction. Having, after long painstaking researches, arrived at a clear conception of the archetypal plan of the vertebrate structures, he associates that idea with as clear a recognition of the teleological signification of the great principle as our finite capacities are able to attain to. ‘For it is certain,’ writes Professor Owen, ‘that in the instances where the analogy of a machine fails to explain the structure of an organ, such structure does not exist in vain if its true comprehension lead rational and responsible beings to a better conception of their own origin and Creator.’ (Proceedings of the Royal Society, vol. vi. pp. 110–112.)

This and other evidences of the spirit pervading the philosophical writings of our anatomist did not, however, shield him from attacks, in which the charge of atheism or pantheism was insinuated. Owen had been, finally, led by the accumulated proofs of the unity of plan in the vertebrate and articulate types of structure ; by the evidence of “ progressive departure from a general to a special type, given by the succession of extinct forms of animals ;” and “ by the analogies which the transitory embryonal stages in a higher species bear to the mature forms of lower species,” as also by some of the phenomena of “ parthenogenesis,” to the hypothesis of a “ continuously operative secondary creational law.” His first announcement of this stage of his philosophical faith was made in his ‘ Discourse on the Nature of Limbs ;’ but whilst admitting the principle, he acknowledges that he knew not how it worked :—

“ To what natural laws or secondary causes the orderly succession and progression of such organic phenomena may have been committed, we, as yet, are ignorant. But if, without derogation of the Divine Power, we may conceive the existence of such its ministers, and personify them by the term ‘ nature,’ we learn from the past history of our globe that she has advanced with slow and stately steps, guided by the archetypal light, amidst the wreck of worlds, from the first embodiment of the vertebrate idea under its old ichthyic vestment, until it became arrayed in the glorious garb of the human form ” (p. 86).

On the announcement of this conclusion as to the creation of species by the agency of natural law or secondary causes, an acute logician at once denounced this passage and the general scope of the homological works as supporting the “ theory of development.”

“ This theory, as our readers may know, assumes that God did not interpose to create one class of creatures after another, as a consequence of each geological revolution ; but that, through long course of ages, one class of creatures was developed from another.” “ It is not German naturalists alone who are contributing to diffuse scientific Pantheism.” (‘ Little Lectures on Great Topics,’ 1849.)

To this attack Owen briefly replied ; we may quote one passage :—“ The true state of the case is simply this : my assailant has his own notions of the exterminating character ‘ of each geological revolution,’ ” and of the way in which “ God, thereupon, interposed to create one class of creatures after another.”

But there are phenomena which God, in His unsearchable ways, permits to be known by His observant instruments; and these phenomena, faithfully interpreted, plainly indicate that he has been pleased to operate differently from what some prefer to believe: thereupon the intrepeter is charged with "blotting God out of Creation." But in such charge truly lies the impiety. Could the pride of the heart be reached when such imputation came, there would be found, unuttered,—“Unless every living thing has come to be in the way required by my system of theology, Deity shall have no share in its creation.”

The reasoning by which Owen shows that a creative power is fully recognizable, through whatever succession of regulated means it may operate in the production of species, we may refer to the concluding section of one of his late monographs, 'On the Aye-aye,' *Zool. Trans.*, vol. v. p. 87.

Two or three hypotheses or guesses of the mode of operation of the secondary creational law have been propounded. The facts by which Buffon's and Lamarck's views could be tested are so applied in several of Owen's works and papers, more especially on the Anthropoid Apes. In his monograph on the Aye-aye, he applies certain facts in its organization and native habits to the latest propounded hypotheses by Mr. Darwin.

A few incidents in the biography of Professor Owen remain to be briefly noted. He resumed the appointment of "Fullerian Professor of Physiology," in the Royal Institution of Great Britain, in 1858.

On the revival, under the new statute made by the University of Cambridge, of Sir Robert Reade's foundation of public lectures, Professor Owen was appointed lecturer, and received the permission of the Trustees of the British Museum to hold the office in March, 1859. The "Reade's Lectures" date so far back as 1524; but during a long series of years they had ceased to be delivered. On the performance of this duty in 1859, Professor Owen was honoured by the University with the degree of Doctor of Laws. The University of Oxford had previously conferred on Owen a similar degree.

H. R. H. the Prince Consort, desirous that the Royal children should receive the elements of natural history, made arrangements for the delivery of courses of such lectures at Buckingham Palace: those on zoology and geology were given by Professor Owen; those on botany, by Professor Henslow.

The Institute of France decreed to Professor Owen, in 1856, the triennial Cuvierian prize in comparative anatomy; and on the demise of the great botanist ROBERT BROWN, Owen was elected to fill his place as one of the eight foreign Associates of the Institute.

The Emperor of the French transmitted, in 1855, to Owen the Order of the Legion of Honour; the King of Prussia sent the "Ordre pour le Mérite" in 1852; the King of Italy, through his Minister of Public Instruction, Matteucci, transmitted him the order of St. Maurice and St. Lazare. Her Majesty was graciously pleased to assign to Professor Owen, in 1852, his present residence, near Sheen Gate, Richmond Park.

The career of Professor Owen, of which the foregoing is a brief sketch, placed him before the public in such a position as inevitably led to demands upon his time and talents for co-operation in those public services which his science might be expected to promote. The late Sir Robert Peel, in 1843, recommended the formation of a "Commission for inquiring into the state of Large Towns and Populous Districts," and the following were nominated Commissioners by Her Majesty:—Duke of Buccleuch; Lord Lincoln; R. A. Slaney, M.P.; George Graham, Esq.; Sir H. Delabeche; Professor Lyon Playfair; Dr. D. B. Reid; Professor Richard Owen; Captain W. Denison; J. R. Martin, M.D.; James Smith, Esq.; Robert Stephenson, Esq., and William Cubitt, Esq.

The commission issued two general reports, besides special or local reports from particular members. The "Report on the State of Lancaster," 8vo, 1845, is by Owen. It has been followed by a system of water-supply and drainage which is regarded as exemplary, and has been attended with marked diminution of disease and death amongst the "wage-classes," as Owen usually designates the "working-classes," or "lower orders." The termination of the labours of this commission was followed by the formation of a second "Commission, in 1846, for inquiring into the State of the Metropolis," of which Owen was a member, in association with Dr. Southwood Smith, Mr. Edwin Chadwick, and others. Two reports were issued by this commission, which terminated its labours in 1849. At the latter part of that year a commission was appointed to inquire into the live and dead meat-markets of London; including Sir G. Cornwall Lewis, M.P.; Hon. Fred. Byng; Sir Harry Verney, Bart., M.P.; Sir James Duke, Bart., M.P.; William Miles, Esq., M.P.; Professor Richard Owen, and Mr. John Wood (Councilman of Aldersgate Ward Without).

Owen strongly advocated the suppression of intramural slaughter-houses; but a compromise was carried by the City members, and these were retained, whilst the market itself, for live cattle, was suppressed. The consequence is that the streets of London continue on certain days to be obstructed and defiled by droves of oxen and sheep on their way from Islington to the slaughter-houses in the midst of the metropolis. With the exception of the first, the above commissions were "unpaid." We infer from the fact of Owen's being the only name on each in succession that he showed business-like qualities, in attendance, and the preparation of the reports which recommended him to the Governments under which the commissions were issued.

Owen took an active part on the committees for the arrangements, classification, and other preliminary work towards carrying out the Prince Consort's grand idea of an "Exhibition of the Works of Industry of all Nations." He accepted the office of Chairman of the Jury IV., "Raw Materials from the Animal Kingdom," etc.; he contributed an elaborate report on the subjects and awards of his jury, published in the official volume, and, at the suggestion of H.R.H. the Prince Consort, Owen delivered at the Society of Arts (Dec. 16, 1851) the lecture on "Raw Animal Products and their Uses in Manufactures."

On the organization of the "Exposition Universelle" at Paris, in 1855, Owen was requested to act on the Jury XI., for a similar class of objects (Alimentary Substances) as in 1851. The Prince L. Lucien Bonaparte was the chairman; he appointed Owen his vice-chairman, and on the arrival of Owen in Paris, resigned to him the office. In the 'Notes on Objects in the Paris Universal Exhibition,' furnished to the Board of Trade, octavo, 1855, the section on "Alimentary Substances" is from the pen of Owen. In the 'Admiralty Manual of Scientific Inquiry' the section "On Zoology," containing instructions for collecting and preserving animals, was confided to Professor Owen, and has been published as a separate treatise (12mo, 1859).

In 1858, Professor Owen was President of the British Association at its meeting at Leeds, having always been one of its most active and influential members. He was succeeded in the Presidential Chair by H.R.H. the Prince Consort, at Aberdeen. We need not say his address was an excellent one. It gives a lucid sketch of the progress and state of zoology, physiology, and palæ-

ontology, and the astronomical, mechanical, and other physical sciences were not overlooked by this great master of Natural History. The application of scientific principles to practical purposes is also elucidated, and the claims of science to administrative countenance and support were boldly advocated.

Since his appointment, in 1856, to the office of Superintendent of the National Natural History Collections, he has persistently and consistently advocated an extension of space for their display. In his series of Annual Reports, and in a special one with a plan, printed in a return ordered by the House of Commons, 16th March, 1859, the grounds are assigned, on which the estimate of a space of five acres is founded for such increase as may be expected to the Natural History Series in the next thirty years, for the proper display of a Natural History Collection worthy of the commerce and rank of our country. His views, although at first deemed excessive, have been so entirely confirmed by the subsequent calculations and operations of Agassiz and other able naturalists, and the estimates for other museums, that no question is now made on this point. To the proposed transference of the National Collections Professor Owen has only so far assented, that believing the ground at Bloomsbury would cost more than any Chancellor of the Exchequer would be willing to apply to Parliament to expend, he considers the advantages to be gained for science by adequate means of display, so great and so pressing, that it would be desirable to have the requisite space in any accessible locality. Professor Owen's views on this subject are set forth in detail, with plans, in his work 'On the Extent and Aims of a National Museum of Natural History,' octavo, 1862. We trust that this question may receive a favourable and final consideration in the next Session of Parliament, and that Professor Owen may be preserved to us, with health and strength, to realize his grand idea of a National Museum of Natural History.



GEORGE GILBERT SCOTT, ESQ., R.A.

THE revival of the national style of Architecture, conventionally called "Gothic," is not the least among the events which will cause the reign of Queen Victoria to be memorable in history. For centuries the national taste in architectural matters had been falling lower and lower, until it reached a point of degradation below which it seemed almost impossible to descend. From this slough of despond, however, architecture has been drawn out, as it were, and revived, by the untiring exertions of an earnest, thoughtful band of men, among the leaders of which stands the name of George Gilbert Scott.

Mr. Scott is the grandson of the Rev. Thomas Scott, whose Commentary on the Bible is so well known and so highly esteemed as to have become a necessary of almost every English household. Another ancestor of Mr. Scott was that brave old navigator Sir Humphrey Gilbert, who, with his half-brother Sir Walter Raleigh, was one of the early colonists of the great Western continent.

The Rev. Thomas Scott, father of the subject of this biography, was incumbent of Gawcott, in Buckinghamshire; and at that quiet little village George Gilbert Scott was born, in the year 1811.

At a very early period of his life Mr. Scott displayed an extraordinary fondness for roaming over ancient churches and other buildings; and before any settled walk in life had been selected for him, he had enriched his sketch-book with numerous drawings, taken from the unexplored stores of Gothic architecture afforded by the sacred edifices reared by the pious zeal of his mediæval ancestors. It was thus that the mind of the young architect became imbued with those principles which have guided him throughout his professional career.

Following out the instincts which thus early developed themselves, Mr. Scott was articled to Mr. Edmeston, of the City of London, and during the term of his apprenticeship he devoted himself with ardour to the task of mastering the most intricate details of his profession. At the time we are writing about, scarcely any architect ventured to propose to his client a design for a church or other building in the Gothic style of architecture. Classic was imperial, and the young student had ample opportunities afforded him of becoming acquainted with the principles of the prevailing architecture; but he never for a moment lost sight of the great fact that our national style was adapted to all the requirements of the country. He worked with untiring perseverance, storing his mind with the details of those beautiful examples of architecture which his native England affords in such rich variety and profusion. At a comparatively early period of his life Mr. Scott commenced practice, and devoted himself to his profession with so much zeal, that after a few years success came to reward him.

The first great Gothic work carried out by him was that beautiful Cross at Oxford, known as "The Martyrs' Memorial," which was erected in 1841. Such a triumphant proof of the applicability of the despised Gothic gained many converts; and in the same year Mr. Scott supplied a design, at the instigation of the late Mr. Herbert Minton, for a church at Hartshill, near Stoke-upon-Trent.

In the following year, the old parish church of St. Giles, Camberwell, having been destroyed by fire, Mr. Scott was selected to erect a new edifice. The beauties of a pure style of building were thus brought under the immediate eyes of metropolitan inhabitants, and "the Revival" moved forward with rapid strides. Shortly after this period, Mr. Scott was entrusted with the erection of churches in the City Road, Islington, also at Leeds, Croydon, and Liverpool.

In 1846 the great fire occurred at Hamburg, which destroyed, among many other public buildings, the church dedicated to St. Nicholas. In a most commendable spirit, the city authorities invited architects of all nations to compete for the honour of erecting a new church, and Mr. Scott's designs were finally selected. This magnificent church is now nearly completed, and approaching, as it does, to the importance and magnitude of a cathedral, is a work of which any city might justly be proud. The cost of St. Nicholas, up to the present time, has been about £200,000. The tower

and spire remain to be completed; but exertions are being made to raise sufficient funds for this purpose, and there is every reason to hope that in another year or two the city of Hamburg will possess one of the finest churches in Europe.

Another of Mr. Scott's works, erected about this time, is the cathedral at St. John's, Newfoundland, which bears out the high reputation of its architect.

The grand old parish church of St. George, at Doncaster, having been unfortunately destroyed by fire, the erection of a new edifice was determined upon, and Mr. Scott was the architect selected to carry out the work. The church was consecrated in 1861; and it is a standing evidence that the careful study of ancient examples will enable an architect of the present time to build a church worthy of ranking with the glorious productions of the middle ages.

In 1855 the city of Hamburg offered a premium for a design of an Hôtel de Ville. Architects of all nations were invited to compete, and once more Mr. Scott was successful. His design has not yet been carried into execution, but there is good reason to hope that no long time will elapse before steps are taken to realize one of the most perfect ideas of its accomplished author.

It would be tedious to particularize all the original works which have been erected from Mr. Scott's designs, but amongst them we may name, as worthy of especial notice, the church of All Souls, at Halifax; the Chapel, Library, and Master's Lodge, at Exeter College, Oxford; St. Paul's, Dundee; the Library of University College, Oxford; the Chapel and Library at Harrow; the Chapel of Wellington College; All Saints' Church, Taunton.

The restoration of our magnificent cathedrals has in many instances been undertaken and carried out in a worthy and conservative manner, within a very recent period. Mr. Scott's extensive knowledge of his art has been brought to bear upon several of these venerable fanes, with the most signal and successful results. The interior of Ely Cathedral has been restored thoroughly under Mr. Scott's careful and painstaking superintendence; and at this time he is engaged in erecting the lantern over the central portion of the cathedral, as a memorial to the late Dean Peacock, to whose untiring exertions the architect is mainly indebted for being enabled to bring his great labour of love to so successful a completion. The other cathedrals whose restorations have been and are

being superintended by Mr. Scott, are Lichfield, Hereford, Durham, Peterborough, Salisbury, Ripon, Chichester, Chester, St. David's, St. Asaph, and St. George's, Windsor.

For several years, also, Mr. Scott has been conservating architect to the Dean and Chapter of Westminster; and at all times his earnest and careful attention are devoted to the preservation of the Abbey, and the restoration of its original features in their integrity.

Other restorations, in all parts of the kingdom, have been carried out by Mr. Scott; and, in all instances, they exhibit a conservative spirit, which, while restoring, has carefully avoided the introduction of any features without ample warrant. We will instance the church of St. Mary's, Stafford; St. Mary's, at Nottingham; the parish church of Aylesbury; St. Michael, St. John, and Holy Trinity, at Coventry; the Priory Church, at Brecon; the old church at Dover Castle; the parish church at Loughborough; Holy Trinity and St. Mary's, at Hull; St. Mary's, at Oxford; St. Mary the Great and St. Mary the Less, at Cambridge; and St. Cuthbert's, at Darlington.

Among the more important domestic buildings erected from Mr. Scott's designs are Kelham Hall, the seat of J. H. Manners Sutton, Esq.; Walton House, the residence of Sir Charles Mordaunt; Pippbrook House, at Dorking, for W. Forman, Esq.; and Hapdunos House, for H. R. Sandbach, Esq.

The great difficulty experienced by the pioneers of "the Revival" was the absence of text-books and examples; but the most formidable of all was the inability of workmen to carry out the designs made by the architects. This want Mr. Scott set himself to supply in a thoroughly practical manner, by the formation of a Museum of Architecture, comprising books, pictures, and photographs bearing upon the history of the art; also examples of ornament and detail, represented by plaster casts, selected from the most perfect of the works of mediæval architects, both English and foreign; and this collection Mr. Scott proposed to make practically useful, through the medium of lectures addressed to art workmen. Much time and thought were devoted by the founder of the Museum to its success, and the result is that a large number of books, pictures, casts, and models has been brought together in an apartment at the South Kensington Museum, accessible at all times to those who wish to improve themselves in the study of

architecture and the arts bearing upon it. There can be no doubt that to this Museum we owe it, in a great measure, that we have at the present time an increasing number of skilled artisans, capable of realizing the ideas of architects, and of carrying out those ideas worthily and successfully.

In 1857 Mr. Scott was elected an Associate of the Royal Academy, and for some time subsequently, he, in conjunction with Mr. Smirke, undertook to deliver the lectures on architecture. These addresses were directed to the education of students in the principles of Gothic architecture, the history of the rise and progress of the style, and its adaptability to the wants and requirements of our country.

During this year the great competition took place for the new Government Offices, and Mr. Scott received a premium of £300 for his design, which was, of course, in the Gothic style.

In 1858 he was appointed, by Lord Derby's Government, architect for the new Foreign Office. He prepared all his plans, after most laborious and careful consideration; tenders were applied for and accepted; but on the accession of Lord Palmerston to power, Mr. Scott's Gothic design was abandoned, and he was required by the Premier to produce a Classic design. Being fully conversant with both styles, Mr. Scott, after having proposed, but in vain, as a *tertium quid*, an Italian design founded on the Early Venetian or Semi-Byzantine style, and after ample protest, prepared a new set of plans, from which the Foreign Office is now being built.

Mr. Scott is joint architect with Mr. Digby Wyatt for the new India Office, which is of similar design, and forms a part of the comprehensive scheme for the concentration of all the Government Offices on the vacant space south of Downing Street.

The chief works now being built from Mr. Scott's designs, in addition to the above, are the New Infirmary at Leeds, the Town Hall and Markets at Preston; the Chapel, Master's Lodge, and contiguous apartments at St. John's College, and the University Library, at Cambridge.

In the year 1860 Mr. Scott was elected a Royal Academician, filling the vacancy occasioned by the death of Sir Charles Barry; and in 1861 the gold medal of the Royal Institute of British Architects was awarded to him.

In 1862, a public subscription having been entered into with the

view of erecting a memorial to the late Prince Consort, seven of the leading architects of England were invited to send in designs. These having been submitted to the Queen in the early part of the present year, her Majesty was pleased to select Mr. Scott's design of a Gothic cross, which decision was endorsed by the Royal Commissioners, and by the favourable opinion of the country at large. This beautiful work will very shortly be commenced, and it is to be earnestly hoped that the ideas of the architect will be carried out to their fullest extent; for, if so, England, instead of being a byword for her public memorials, will be able to boast of the possession of a national monument second to none in the world for beauty of design and perfection of detail and execution. Of other public monuments designed by Mr. Scott in recent years the principal are the "Raglan Memorial" at Westminster, and the "Hotham Memorial" at Melbourne.

Besides being a Royal Academician, Mr. Scott is a Fellow of the Royal Institute of British Architects, Fellow of the Royal Antiquarian Society, Fellow of the Institute of Architects of America, and of Holland; he is also an honorary member of numerous learned societies, both in London, the provinces, and foreign countries.

Not only has Mr. Scott been an industrious architect, but, in the brief intervals of his business, he has found time to produce several literary works. His chief publications, besides a considerable number of lectures and papers read to learned societies and printed in their records, are, 'A Plea for the Faithful Restoration of Ancient Churches,' 'Gothic Architecture, Secular and Domestic' (which has already passed through several editions,)—'The Conservation of Ancient Architectural Remains,' and 'Outlines of Westminster Abbey.'



SIR GARDNER WILKINSON, D.C.L., F.R.S.

It is not too much to say that during the last fifty years the history of the ancient eastern monarchies has been recovered. The truth of this assertion may be ascertained by a comparison of any cyclopædia published at the beginning of the nineteenth century with one of the present day. In the former, the articles Egypt, Assyria, and Babylonia, consist, in their portions relating to early history, of fabulous or doubtful statements on second-hand authority, or of vague generalizations: in the latter, a more or less systematic outline is filled with authentic details derived from ancient contemporary sources. This advance is due to two great discoveries, by which the hieroglyphic and cuneiform characters have been interpreted after two thousand years of ignorance.

England may fairly claim the largest share of these discoveries as the work of her scholars; and whether in the rank of those who have interpreted the long-unknown characters, or of those who have applied the results to the development of ancient history, Sir Gardner Wilkinson must always hold a high position. The history of the results of hieroglyphical discovery in its widest sense, as elucidating the religion, manners, and life of the ancient Egyptians, could not be better given, had we space, than in this biographical notice.

Sir Gardner Wilkinson was born October 5th, 1797. His father was the Rev. John Wilkinson, of Hardendale, in Westmoreland, and his mother was descended from the ancient and noble family of Lovell, of Harleston. Having lost both his parents at an early age, he was left to the care of a guardian, the Rev. Dr. Yates, one of the chaplains of Chelsea College, and at his own request and that of his uncle, who was a Harrow man, he went to

Harrow in 1813; and the same University being selected for him of which his father was a member, he matriculated at Exeter College, Oxford, in 1816. With a similar idea of conformity, his guardian recommended that he should adopt his father's profession, the Church; but this was not destined to be his future career, and the impressions of his early childhood had an influence upon him which seems never to have been effaced. He had listened as a child to the adventures of Jackson, the well-known traveller in Morocco, and the days when he was expected to dine at his father's house were always looked upon as *dies fasti*, and the interest thus awakened was not a little increased by the fact of his father having been one of the Fellows of the African Association. The first indication of a love of roaming, to be afterwards so extensively gratified, seems to have shown itself in a desire to enter the Royal Navy, and he was doubtless prompted to choose that profession from having been taken to the Downs, in 1808, to visit Captain (afterwards Admiral) Richardson, a cousin of his father, who was flag-captain to Sir Richard Strachan in the unfortunate expedition to Walcheren, then preparing; and if this wish was opposed by his friends, he still clung to the dream of his childhood, and in after times, during his long sojourn with the Bedaweis, it often occurred to him how singularly his childish wishes had been realized in the wild life he passed in the desert, and how thoroughly his disposition enabled him to enjoy that mixture of solitude and excitement which was rendered not less attractive by the privations a long journey in the desert often entails. For a life in the desert is very different from the usual mere passage across it. Instead of traversing a known route, marked by its wells and halting-places, the traveller enters a region where a scanty supply of brackish water can only be obtained, sometimes after a march of seven days, meat is a luxury, and every necessary required for a sojourn of several months must be provided beforehand.

There were other influences to account for the interest which the future Egyptologist showed at an early age for archæological pursuits. His father was a Fellow of the Society of Antiquaries, and the plates published by that body may have suggested to him to make copies of ancient sculptures,—a pursuit in which he delighted while a boy and did not abandon at Oxford, where his pencil was often employed in the Arundel Collection, and which induced that taste for architecture which led him at school to

make sketches of every church within a radius of several miles round Harrow, rising early in the summer mornings, and returning from his secret expeditions in time not to be found "absent" at the call of names. These tastes and his love of travelling were more fully gratified while he was at Oxford by repeated visits to the Continent during the vacations. No sooner had he passed the examination for his Bachelor's degree than he took a more extensive journey, intending afterwards to enter the Army; but while in Italy, having become acquainted with Sir William Gell, and having shown an unusual interest in antiquarian researches, he was persuaded by that eminent archæologist to examine the monuments of Egypt more minutely than could be done in a hasty journey. He devoted the autumn of 1821 to the study of the principal works, ancient and modern, which treated of Egypt; and thus prepared, he left for Alexandria in October of the same year. Abandoning his intention of entering the Army, Mr. Wilkinson now devoted himself to archæological pursuits; and furnished with the essays embodying the interesting discoveries of Dr. Young, which were the groundwork of the alphabetic mode of reading the hieroglyphics, and by which the names of the kings, the numbers, dates of years and months, and other essential points had been determined, he was able to make a large collection of drawings from the sculptures relating to the history, the religion, and other important matters connected with ancient Egypt. At that time the phonetic system of Champollion (like the "*laurus*" of old) *nondum erat*, and the alphabetic value of the letters advocated by Dr. Young had not been admitted by the French *savant*, who even opposed at first what he afterwards claimed as his own discovery. The fact that the alphabetic value of hieroglyphics had already been set forth as early as the summer of 1821, is proved by the note-books of Sir Gardner, containing memoranda of the attempts then made by him, under the guidance of Sir William Gell, to decipher hieroglyphics alphabetically. It must always be regretted that one so talented as Champollion should have denied the claims of Dr. Young, when fairness and candour would only have enhanced the credit so justly due to him for having elucidated the Egyptian grammar, and reduced to a system the proper mode of reading the hieroglyphics, and carried the study to a point which no other person could have reached.

Mr. Wilkinson soon established himself at Cairo, with other English gentlemen of like pursuits, among whom, at one time, were Mr. Lane, Mr. Hay, of Linplum, the late Mr. James Haliburton, and Mr. Bonomi. Here he learnt Arabic, the spoken language of Egypt, and applied himself to the study of Coptic, the later form of ancient Egyptian. Making Cairo his headquarters, he examined every part of Egypt and Lower Nubia. Twice he ascended the river as far as Wádee Halfah, the Second Cataract, and several times as far as Thebes, staying at the latter site for more than twelve months during two of these visits, and he made long journeys in the deserts on either side of the Nile and to the Egyptian Oases. His first journey from Cairo was undertaken in February, 1822, in the company of his friend and fellow-collegian Mr. Wiggett (of Allanbay Park, Berks), and during the six months he then passed in Upper Egypt and Nubia, he made a very extensive collection of drawings of hieroglyphic inscriptions and sculptures from the monuments, part of which he sent to Dr. Young, by whom they were published in the Transactions of the Egyptian Society,—the parent of the better-known Royal Society of Literature. Having in 1823 spent half a year in the deserts between the Nile and the Red Sea (which he afterwards explored more in detail), he sent a short account of the portion of that district between Suez and El-Kuseyr to the Royal Geographical Society, which was printed in the second volume of their journal. This was but a small part of the survey of Egypt he afterwards completed, and which included the whole of the eastern desert, from the north of Suez to about thirty miles south of Berenice, comprising nearly seven degrees of latitude, on the east side of the Nile, and the whole of the Oases of Egypt on the west, together with the Valley of the Nile from the Delta to the First Cataract. This survey was on a scale of about ten inches to a degree, and though for more than twenty years in the hands of an eminent geographical publisher, has, we regret to say, not yet appeared. It is probable that Sir Gardner's great 'Survey of Thebes' would have met with a like fate, if he had not caused it to be engraved at his own expense.

A desire to collect whatever might be useful, and to impart it to others, led Mr. Wilkinson to present to the British Museum the antiquities he obtained in Egypt during his first visit, consisting of more than three hundred objects, besides numerous specimens

of natural history; and the same principle will no doubt influence him in the disposal of the very interesting antiquities he has since amassed, principally during his subsequent visits to Egypt and Italy. It must be remembered that these various collections were formed under circumstances of no ordinary difficulty. He had to endure no slight privations during his desert journeys, especially while mapping those districts, and making extensive collections and coloured drawings of their aboriginal flora. On one occasion he was for more than two months without tasting good water, especially during a journey along the coast of the Red Sea; and while with the 'Abábdeh Arabs he subsisted for a whole month on bread made from the food of camels, his own provisions having been exhausted, partly by the length of the journey, partly by his relieving the poor Arabs of that desolate district from the effects of the famine of 1826, from which they had been long suffering. The influence he obtained over the Arabs was so great, that for years after he had left the desert they frequently came to him at Thebes, Cairo, and other places, in order to give him whatever further information they could obtain respecting the curious objects which had appeared to interest him during his sojourn with them. His kindness to the people of Thebes, especially in lightening the responsibility of the native governors during their difficulties with an exacting and inexorable government, so endeared him to them also, that for more than twenty years after he had left that place they continued to keep intact and in repair the abode he had formed amidst the tombs of El-Kurneh, as a voluntary and disinterested tribute of gratitude to one whom they did not forget even after so long an absence.

During his first visit to Egypt, which lasted twelve years, Mr. Wilkinson not only furnished Dr. Young with copies of inscriptions previously unknown, but composed and published his first work, 'Materia Hieroglyphica, containing the Egyptian Pantheon, and the succession of the Pharaohs,' etc., which was printed at Malta in 1828, and issued with another, called 'Extracts from several Hieroglyphical Subjects,' written at Thebes in 1827, and printed at Malta in 1830. These works contain very important information on the difficult subjects to which they relate; and the drawings, executed and lithographed in Egypt by the author, for accuracy of design and beauty of execution, have rarely been

equalled, never excelled. On account of the small number printed, this volume is, unfortunately, extremely rare.

In 1833, Mr. Wilkinson was compelled, by failing health, to return to England; but he could not remain idle, and soon published a general account of Egypt, with the title, 'Thebes and Ancient Egypt.' This work was fuller and far more accurate than any upon the same subjects published after the interpretation of hieroglyphics had been discovered, and is remarkable as containing the first account of the manners and customs of the ancient inhabitants. The latter subject Mr. Wilkinson soon afterwards decided to treat in a separate work, fully illustrated by drawings of the ancient paintings and sculptures; and in 1837 the first portion of his great work, 'The Manners and Customs of the Ancient Egyptians,' appeared in three volumes. Though he left England in 1838 and 1839 to visit Spain and Italy for his health, he did not abandon his enterprise, and in 1841 he published two more volumes of text and a volume of plates; this completing the work. The 'Ancient Egyptians' is one of those remarkable books that make an epoch in literature, establishing a new province of knowledge, and taking a position as works of reference from which they cannot be displaced. In variety of information on every subject connected with the old inhabitants of Egypt, and for extensive and accurate illustrations, it is quite unrivalled; and those who wish to understand the ancient Egyptians must do so with this work for their guide. Upon the publication of the first part, the author was at once recognized to be the English authority on ancient Egypt; and in 1839 he received the honour of knighthood for his literary services. The 'Ancient Egyptians' had scarcely been completed when a new work on the monuments, 'Modern Egypt and Thebes,' appeared, being published in the next year. It was long the guide-book for travellers on the Nile, and is still indispensable as the scientific account of the monuments to all learned travellers. Sir Gardner also undertook a condensed edition of this work for Mr. Murray's series of Hand-books.

After an absence of eight years, Sir Gardner again visited Egypt in 1841; and leaving England in 1843, travelled in Greece, paid a third visit to Egypt, visited Syria, Constantinople, Tunis, and Sicily, and returned, after being absent two years, by the Illyrian coast of the Adriatic. While in the Regency of Tunis he

was fortunate in being able to visit the sacred city of Keyrawán, and make drawings of its Arab monuments. He executed many interesting architectural sketches during this tour, and acquired fresh materials relating to ancient Egypt. The chief published result is his important work on 'Dalmatia and Montenegro.' Returning home in 1845, he revisited Egypt in 1848, and for the first time ascended the Nile beyond the second cataract, to examine the remains of Napata, Tirhakah's capital, at Gebel-Berkel, thought by M. de Rougé to be the Noph of the Bible. He made a careful plan of the site, which ought to be published as a companion to the 'Survey of Thebes.' Having visited Italy and other countries, he came home in 1850. Immediately on his return, his work on the 'Architecture of Ancient Egypt' appeared, containing many accurate and beautiful drawings. It was succeeded by the 'Turin Papyrus of Kings,' a facsimile, with explanatory letterpress, of an important Egyptian chronological document, which Dr. Lepsius had previously published, but in a less complete manner.

A long study of ancient monuments, and especial attention to architecture, naturally directed Sir Gardner's mind to the subject of taste; and this bent was confirmed by his becoming interested, both as a juror and as an exhibitor, in the Great Exhibition of 1851. Some years afterwards he published the results of long and elaborate investigations, in a valuable essay 'On Colour, and the Necessity for a General Diffusion of Taste among all Classes.'

In 1855 Sir Gardner paid a fifth visit to Egypt to examine the remains of early Christian architecture, and while drawing at Thebes in the heat of the sun, suffered from a *coup de soleil*, which compelled him to return home, though, as soon as he was sufficiently recovered, he utilized his homeward journey by making an examination of the French cathedrals. Soon afterwards the 'Popular Account of the Ancient Egyptians,' in many respects a new work, was published, and in 1857 an entirely new essay, 'The Egyptians in the time of the Pharaohs,' as a companion to the Crystal Palace Guides. Sir Gardner Wilkinson was also occupied at this time in annotating the Rev. George Rawlinson's 'Herodotus;' and he has at various times contributed papers to the Proceedings of the Royal Institute of British Architects, and of other Societies.

In 1856 Sir Gardner Wilkinson married Caroline Catherine,

eldest daughter of Henry Lucas, of Uplands, county Glamorgan, Esq., by Caroline, daughter and co-heir of Ponsonby Tottenham, of Rosegarland, county of Wexford, Esq., M.P., a descendant of Sir Thomas Lucas, one of whose brothers, Sir Charles Lucas, is famous in history for his defence of Colchester Castle against General Fairfax in the Great Rebellion, and for his tragical death on the capitulation; while another, Lord Lucas, of Sheffield, was father of Margaret, the celebrated Duchess of Newcastle. Lady Wilkinson takes an interest in botany, and has published an elegant work on British Wild Flowers, as well as an account of the ancient British Church, supporting the well-founded opinion that there was a native church in this island before the preaching of St. Augustine.

Sir Gardner Wilkinson has during late years been occupied in examining the remains of the Britons in England, but more particularly in South Wales, Devonshire, and Cornwall, having visited and fully explored many sites, and made careful drawings and plans, especially of the ancient gold-mines in Wales. Some of these results have been made public in the Transactions of Learned Societies.

Notwithstanding his numerous publications, filling no less than twenty-two volumes, four of which are of plates from the author's drawings,—in one case lithographed by himself,—besides contributing to the publications of Societies, a great mass of materials remains in Sir Gardner's hands. His note-books are full of drawings beautifully and clearly executed, as well as careful memoranda of every object he met interesting to a student of archæology and art. His works exhibit but a selection, and it would be a boon to knowledge could he be prevailed upon to publish these note-books as they stand.

Sir Gardner Wilkinson is an Honorary Member of the Royal Institute of British Architects, a Corresponding Member of the Royal Imperial Academy of Sciences of Vienna and the Royal Academy of Turin, an Honorary Fellow of the Ethnological Society of London, and an Honorary Member of the Entomological, Oxford Architectural, and American, Oriental, and Ethnological Societies.



SIR WILLIAM JACKSON HOOKER,

K.H., LL.D. AND D.C.L. OXON., F.R.S., L.S., AND A.S., etc.,

DIRECTOR OF THE ROYAL GARDENS, KEW.

IN the long career of this distinguished naturalist we have a bright example of untiring energy in the pursuit of a comparatively abstruse science, which he has of late made eminently conducive to the instruction and delight of the people. Commencing with an ardent desire for travel, followed by the occupation of an academic chair, in which the lecturer took care to enliven the labours of his class-room with genial field-work, Sir W. J. Hooker ever kept the element of usefulness in view. When, therefore, a vacancy occurred in the Directorship of our Royal Botanic Gardens, no better appointment could have been made than that which secured his services to the country. Here he has not only continued to labour unceasingly as a scientific botanist, but has devoted himself to collecting and utilizing the botanical products of foreign climes for national purposes; and the result—as we shall presently show—has proved of no small importance to Britain and her numerous dependencies.

William Jackson Hooker was born in Norwich, on the 6th of July, 1785, in which city he received his education. His family was originally of Exeter, and boasts a kindred descent with the learned author of 'Ecclesiastical Polity.' Early in life he inherited an ample competency, and having imbibed a taste for natural history, especially Botany, which was warmly encouraged by Sir James Smith and his future father-in-law, Mr. Dawson Turner, Mr. Hooker, in 1809, at the suggestion of Sir Joseph Banks, undertook a voyage with the view of exploring the natural productions of Iceland. He made ample collections of specimens and drawings, but, unfortunately, they were lost soon after his embarkation

for England, through the destruction of the ship by fire. Happily, the life of the young botanist was spared; and he has given us an interesting reminiscence of his adventures in his first contribution to literature, 'Recollections of a Tour in Iceland.' As early as 1812, he was elected a Fellow of the Royal Society of London, and accepted in 1820 the Chair of Regius Professor of Botany in the University of Glasgow. "As a Professor," wrote a contemporary botanist nearly forty years ago, "Dr. Hooker is deservedly popular. His extraordinary zeal and the singular amenity of his manners are sure to gain the regard of his pupils, whom he annually gratifies by an excursion into the Highlands of Scotland. The same qualities have also won him the most extensive botanical correspondence and probably the largest herbarium in Britain."

In 1841, Sir W. J. Hooker, having received the honour of Knighthood six years previously, in consideration of his botanical attainments, entered upon the important charge of Director of the Royal Botanic Gardens of Kew. The limited portion then open to visitors was so rich in the vegetable productions of the southern hemisphere, derived from the exploring voyages of Sir Joseph Banks, Captain Flinders, Mr. Robert Brown, Mr. Allan Cunningham and others, that an opinion began to be loudly expressed throughout the country that the Gardens should be placed upon an improved footing, and rendered available as a national scientific establishment. A Commission was appointed to investigate the subject; a return was made to the House of Commons in the shape of a report from Dr. Lindley, who surveyed the Gardens in conjunction with two eminent practical gardeners, and before twelve months had expired, the suggestions of the report were carried into execution.

One of the first acts of Sir W. J. Hooker in his new appointment, was to admit the public daily to the Gardens. Not only the grounds, but the plant-houses were thrown open; and while the grounds have been enlarged, through the kind consideration of her Majesty, to upwards of three hundred acres, the plant-houses have been increased in dimensions and grandeur, through the wise liberality of the House of Commons, to an extent unequalled in any country of the world. To show how largely the public participate in the enjoyment arising from this grand development of Sir W. J. Hooker's views, we may refer for a moment to the statistics of the number of visitors. During the twenty years from

1841 to 1860, the annual number gradually rose from 9174 to 425,314, until in 1862, the year of the second International Exhibition, it exceeded half a million. On Sunday, August the 24th of that year, there were no fewer than 18,120 visitors, nearly as many as entered the Gardens during the whole first two years of Sir W. J. Hooker's Directorship.

But the Royal Gardens of Kew must be viewed as an establishment of scientific renown, and not a mere resort for recreation. Previous to 1841 England had no national Botanic establishment like those of Paris, Berlin, Vienna, Göttingen, St. Petersburg, Copenhagen, and Stockholm. The Kew establishment now surpasses all these in efficiency and importance. It comprises upwards of thirty Plant-houses (besides extensive heated Pits and Frames), including the great Palm-stove and a Temperate Conservatory of still larger dimensions, three important Museums, and a Library and Herbarium. Here horticulture and scientific botany are vigorously encouraged, promoting the useful arts which depend on vegetable produce, and supplying information to botanists, merchants, and manufacturers; here, also, plant-collectors and gardeners are trained for home, colonial, and foreign service; and here are exhibited useful and ornamental plants from all lands and climates, together with their products, whether as food, drugs, dyes, timbers, textiles, or cabinet-work. Such is the happy admixture of the scientific, ornamental, and useful elements at Kew, that while foreman *a* is busy tending his forty-four thousand bedding-out plants for the ornamental borders, and foreman *b* is trimming the trees, lawns, walks, clumps, and flowering-shrubs, foremen *c*, *d*, *e*, *f*, *g*, and *h* are looking after the conservatories of stove-plants, orchids, ferns, pitcher-plants, water-lilies, palms, spices, the arboretum of hardy trees and shrubs, and the nurseries for rearing trees and shrubs for the gardens and metropolitan parks; the objects in the museums are also being carefully arranged and labelled by well-informed Curators, and learned men of all countries are consulting books and dried specimens in the Library and Herbarium.

The Museum buildings, devoted to the illustration of Economic Botany, are no fewer than three in number. It was in 1847 that the formation of this portion of the establishment suggested itself to the fertile mind of Sir W. J. Hooker. With his usual caution, the Director first sought permission to occupy a single but large apart-

ment (in a building originally used as a royal fruit-store) with a display of some contributions from himself and friends, intimating that they might prove useful to the merchant, the manufacturer, the timber-dealer, the cabinet-maker, or the druggist. So humble a request could not but be cheerfully granted. The instructive aspect of the room led to the occupation of the entire house with one hundred large cases: the overflowing of the house led to the construction of a new edifice of three extensive floors, with another hundred much larger cases; and now the spacious Orangery, erected a century ago by Sir William Chambers for Augusta, then Princess Dowager of Wales, is being filled with that most wonderful collection of Colonial Woods lately assembled in the International Exhibition.

To complete the scientific usefulness of the establishment a Botanical Library and Herbarium were needed; and Sir W. J. Hooker commenced the formation of these by opening his own valuable collections to scientific botanists, on condition of their being accommodated with a suitable building. A mansion at the entrance to the gardens, formerly occupied by the King of Hanover, was granted for this purpose; and now, other collections having been added as gifts, it contains the most extensive and practically useful Library and Herbarium ever formed, and includes more than 30,000 original drawings of plants, mainly collected and presented by the Director, and many of them executed by himself. A large proportion of the most valuable botanical works published in Europe during the last ten years have been prepared within its walls, authors both of this and foreign countries having frequently taken up their abode at Kew for weeks, and even months, for the purpose. Another important feature in the scientific department of the Kew establishment is the service rendered to horticulture and botany in the several exploring missions that have been carried out of late years. Valuable assistance has also been given towards the foundation and maintenance of similar less ambitious establishments both at home and abroad. Cinchonas, for example (trees yielding quinine), have been reared in great numbers at Kew, and exported to the botanic gardens and pharmaceutical plantations of India, Ceylon, and the West Indies.

All this involves an enormous amount of correspondence, nice discrimination of materials, and a wise economical distribution of

time and labour. Sir W. J. Hooker, in his seventy-ninth year, is still vigorously engaged in the management of Kew Gardens, aided by his son Dr. Joseph Hooker, as Assistant-Director, himself one of the most accomplished, and probably the most philosophic, botanists of our time.

Among the works produced by Sir W. J. Hooker up to this time may be mentioned—

‘Tour in Iceland’ (two editions).

‘Descriptions of the Cryptogamic Plants in Humboldt’s Gen. et Sp. Plant. Orbis Novi.’

‘Muscologia Britannica’ (1 vol.), in conjunction with Dr. Taylor (two editions).

New edition of ‘Curtis’ Flora Londinensis’ and three volumes of Supplement, in folio.

‘British Jungermannia.’ 1 vol. large 4to.

‘Musci Exotici.’ 2 vols. 4to and 8vo.

‘Flora Scotica.’ 1 vol. 8vo.

‘British Flora’ (1 vol. 8vo), which has gone through eight editions, the last two in conjunction with Dr. Arnott.

Vol. V. of Sir James Smith’s ‘English Flora’ (or Vol. II. of ‘British Flora’), comprising the Cryptogamia of Great Britain.

‘Exotic Flora.’ 2 vols. large 8vo, the plates in 4to.

‘Icones Filicum’ (2 vols. folio), in conjunction with Dr. Greville.

‘Botanical Miscellany.’ 3 vols. large 8vo.

‘Journal of Botany,’ being a second series of the preceding; a third series, under the title of ‘London Journal of Botany;’ and a fourth series, entitled ‘Kew Garden Miscellany.’ 20 vols. 8vo.

‘Botanical Magazine,’ of which the first fifty-three volumes were conducted by Mr. Curtis, Dr. Sims, and Mr. Gawler; the rest, vol. liv. to lxxxix. (of the present year, 1863), by Sir W. J. Hooker. This is probably the oldest periodical scientific work in existence, having been commenced by Mr. Curtis in 1793 and continued uninterruptedly to the present time, and comprises upwards of 5400 figures executed by Sydenham Edwards, John Curtis, and (by far the greater number and the best) Mr. Fitch.

‘Companion to the Botanical Magazine.’ 2 vols. 8vo.

‘Flora Boreali-Americana.’ 2 vols. large 4to.

The botanical portion of ‘Murray’s Encyclopædia of Geography.’ 8vo.

‘Icones Plantarum Rariorum,’ with 1000 plates, accompanied

by full descriptions, 8vo. The last volume, being the tenth, was also issued separately, under the term of 'A Century of New or Rare Ferns.' Large 8vo.

'Genera Filicum,' illustrated with Figures of all the Genera by Francis Bauer.

'A Second Century of New or Rare Ferns.' Large 8vo.

'The Botany of Captain Beechey's Voyage,' in conjunction with Dr. Arnott. 1 vol. 4to.

'History of the Victoria Regia.' Imperial folio.

'Species Filicum' (5 vols. 8vo), of which a supplementary volume is preparing.

'British Ferns.' 1 vol. large 8vo.

'Filices Exoticæ.' 1 vol. 4to.

'Garden Ferns.' 1 vol. large 8vo, etc.

Most of the above works are illustrated by very numerous figures, partly executed by Sir W. J. Hooker, but chiefly from the talented pencil of Mr. Fitch.



WILLIAM STERNDALE BENNETT,

PROFESS. ET MUS. DOC. CANTAB.

THE early career of this eminent musical composer, like that of many others of his countrymen in science, art, and commerce, was of a chequered character. Born in 1816, at Sheffield, in Yorkshire, he had the misfortune to lose not only his father,—Robert Bennett, a musician of more than average ability, and the organist of the parish church of that town,—but his mother also, at an age so early that he has scarcely any recollection of them. Not very long after this severe loss,—indeed, whilst he was only three years old, he was taken charge of by his grandfather, John Bennett, who held the appointment of Vicar Choral, or Lay Clerk, in King's College, Cambridge. Having discerned the dawning of musical genius in his interesting *protégé*, and with a view to make the acquirement of its theory and practice a means for the future livelihood of the somewhat precocious boy, John Bennett entered him as a chorister of his own College when he had reached his eighth year, the age at which boys are usually admitted into Cathedral and Collegiate choirs,—those nurseries of musical, as they ought also to be, agreeably to the statutes of founders and benefactors—but which they now are not—of classical education. Here William Sterndale Bennett's progress was so rapid, and his talent so obvious, that he attracted the attention of the Rev. W. F. Hamilton, a member of Peter House, and speedily secured his patronage. This gentleman, being persuaded that the gifted chorister of King's could have no chance of rising to future eminence if he remained merely as a singing-boy in the choir of that College, neglected as to his musical no less than as to his ordinary education, made interest with the authorities of the Royal Academy of Music, then but recently established in Hanover Square, London, who

admitted him into that Institution at the earliest moment its rules permitted,—ten years of age,—and forthwith took charge of his studies. In entering this musical seminary it is customary for the pupil to make choice of the instrument which he purposes to adopt as his speciality in after life. This choice, however, not precluding the possibility of change at some future time, William Sterndale Bennett, after a short time, gave up the violin as his instrument, and finally abandoned it for the pianoforte. The usefulness of his first selection has, however, been of considerable service to him in the prosecution of his studies, since it not only gave him a greater insight into the means of writing for stringed instruments, but enabled him, by the correct judgment of the ear, to decide at once as to the key-note of any chord, and even of any single note which might be struck. This peculiarity is indeed possessed by violin players in a much more accurate degree than by those of any other instrument; and it needs no elaborate proof to indicate how highly important and advantageous the acquirement of such a facility must be to any musician who makes composition his study and pursuit.

The violin having been discarded for the pianoforte, William Sterndale Bennett now assiduously applied himself to obtain a mastery of the mechanical difficulties of the latter instrument. In his practice he had at first the assistance of Mr. William Holmes, an accomplished pianist of acknowledged merit. Under that gentleman's tuition his progress was so rapid that he was speedily transferred to the care of Mr. Cipriani Potter, who had been the pupil of Attwood, Calcott, and Crotch, each eminent English musicians in their respective departments, with whom he was afterwards most worthily to be compared. Mr. Potter was not only competent to instruct the young pianist in the sound method of musical practice peculiar to this country, but, having pursued his own studies in Germany after he had been parted with by the English worthies with whom he had in earlier life been associated, and having also enjoyed the friendship, advice, and assistance of Beethoven, he was able to instil into his juvenile pupil's mind those comparatively modern adaptations which belong especially to the German school, and are of incomparable value. This Mr. Potter did with uncompromising fidelity, whilst, from the perseverance of his pupil, he was able to prognosticate his future celebrity.

During the time, however, that William Sterndale Bennett was prosecuting his design of becoming a well-skilled pianist under such competent instructors as Mr. William Holmes and Mr. Cipriani Potter, he did not omit to give his attention to the study of the theory and rules of composition. Here, again, he was singularly fortunate in obtaining the aid of Mr. Lucas, himself one of the earliest and most accomplished pupils whom the Royal Academy of Music "built" for the profession. Afterwards he became the pupil of Dr. Crotch in the department of theory; but he obtained very little assistance or tuition from that Professor, who, upon his retirement from the Royal Academy, transferred him to Mr. Cipriani Potter, in whose competency he was able to place the utmost confidence.

No sooner had the crude system of musical notation and the strict rules of harmony been mastered, than William Sterndale Bennett turned his attention to composition, and produced, as one of the first specimens of talent, that which was afterwards to give him more perhaps of Continental than of native renown, a Symphony, written upon the models of Haydn and Mozart. This Symphony was much admired, not only for the freshness of its phrases, but on account of the cleverness of instrumentation by which every *motivo* is coloured. The fertility of William Sterndale Bennett's musical invention, whilst under Mr. Lucas's tuition, was considerable. He was incessantly at work, and produced in rapid succession a series of fugues, as well as an overture to 'The Tempest,' which indicated unquestionable talent and the largest promise. Amongst the most noteworthy of the specimens he was then constantly throwing off at brief intervals, his Pianoforte Concertos in D minor, E flat, and C minor may be particularly mentioned. These Concertos were written whilst he was Mr. Potter's pupil, and the two latter were performed at concerts of the Philharmonic Society by the special invitation of the Directors, contributing to his rising reputation, and indicating that a brilliant career was before him. He also had written two Pianoforte Concertos in F minor, an overture entitled 'Parisina,' and an instrumental Sestet for pianoforte, two violins, viola, violoncello, and double-bass, before he had completed his twentieth year. But very few of these specimens have been published; and as they have been laid aside because of the modesty of the composer, rather than on account of any imperfection of structure, their very

existence is forgotten, although there is not one, amongst them that will not bear comparison with similar efforts of several of the best and oldest masters.

In the year 1836, after he had left the Royal Academy of Music, having published several of his early compositions, William Sterndale Bennett had the good fortune to make the acquaintance and win the esteem and regard of Mendelssohn. By the invitation, and at the earnest entreaty of that great and accomplished *maestro*, he was induced to visit Germany and take up his residence at Leipsic, where several of his works, particularly his overtures the 'Naiades' and 'Waldnymphe' (written after he left England), and his Pianoforte Concerto in C-minor, were performed at the celebrated Gewandhaus Concerts, under Mendelssohn's own personal direction. So great is its popularity, that the former of these compositions is constantly played at Leipsic, no less than in every other town of Germany where purely classical music is cultivated; indeed, no scheme of thoroughly acknowledged merit or character is ever drawn for the best German instrumental concerts without the overture to the 'Naiades' forming one of its features.

In spite of the promise indicated by his compositions, and the assurance of success if he could but enjoy the benefits of Continental experience, the world had hitherto not smiled very benignantly upon the rising professor. His published compositions were much too classical to command a rapid sale, and but for the liberality of Messrs. Broadwood and Sons, the renowned pianoforte makers, it is doubtful whether the juvenile aspirant could have accepted the patronage of Mendelssohn. They, however, stepped in to his assistance, and sent him on his way, with such encouragement as only delicacy of feeling and kindness of heart can proffer. They had confidence both in the integrity and the talent of William Sterndale Bennett, and they have not been disappointed in him, either as a man or as a musician.

Whilst residing in Germany, where he remained during the years 1837 and 1838, William Sterndale Bennett often played in public at the Gewandhaus Concerts,—his own Concerto in C minor most frequently,—and also brought out several of the overtures he had previously written, but not published in England, all of which, especially the 'Naiades,' as has been mentioned, being most favourably received. At the end of two years—years of in-

tense application and study—he returned to London, where he established himself, and at once obtained the highest reputation as a composer, a pianist, and a teacher of music. At this time he had the good fortune to make the acquaintance and win the affections of Miss Wood—herself an accomplished pianist from having had the advantage of being instructed by Mrs. Anderson—the daughter of Captain Wood, an officer in the Royal Navy, who resided at Southampton. A few years after William Sterndale Bennett's return to London he married this lady, with whom he lived in the most perfect harmony and affection of married life until last year (1862), when, after several months of severe affliction, she died, to the almost inconsolable grief of her husband and three children—a son and two daughters—who survive her. Whilst a pupil in the Royal Academy and paying his addresses to this lady, he wrote an overture (amongst the most facile and elegant of his several orchestral preludes), now well known from being annexed to his popular Cantata, 'The May Queen,' written expressly for the Musical Festival at Leeds in 1858, which he himself conducted. This overture, to which he had at first given the title 'Marie-le-Bois,' had not been previously published.

Soon after his return from Germany and his establishment in London, William Sterndale Bennett brought out his overtures, the 'Naiades,' and 'Wood Nymphs,' better known at Leipsic by its German title, 'Waldnymphé,' and afterwards that which he had entitled 'Parisina,' previously to his leaving England. Each of these orchestral preludes contain many elegant and original specimens of part writing, and fully confirm Mendelssohn's judgment respecting their merit. After producing these compositions he gave his attention almost exclusively to tuition, and has rarely devoted himself to the higher department of his profession, except when any special occasion has called for the exercise of his powers.

Independently, however, of his standing as a London musician and Conductor of the Philharmonic Society, William Sterndale Bennett also holds another honourable office, as Professor of Music in the University of Cambridge. To this Professorship he was unanimously elected in 1856, upon the death of Dr. Walmsley; the duties which devolve upon him in this office are not, however, onerous, being chiefly confined to the examination of exercises for musical degrees, and to conducting two or three concerts during the winter and spring terms.

Of late years, with the exception of the two Cantatas written to order,—‘The May Queen,’ for Leeds; that for the opening of the Great International Exhibition of 1862; the Fantasia-overture, ‘Paradise and the Peri,’ for the Jubilee Concert of the Philharmonic Society, and his Ode for the Installation of the Duke of Devonshire as Chancellor of the University of Cambridge,—the last three works all written last year,—William Sterndale Bennett has written nothing of note; neither has he published any other works upon the theory and study of music than his ‘Classical Practice for the Pianoforte,’ which appeared in 1841, and a ‘Discourse upon Harmony,’ which followed in 1849. Truly, therefore, may every lover of music endorse the following remarks, recently made by another eminent musical Professor (Herr Ernst Pauer):—“For myself, I must be permitted to express my regret that this accomplished master now writes so little, and leaves an expectant public without fresh publications. Has the minstrel hung up his lyre for ever? It is to be hoped not.”



ROBERT GORDON LATHAM, M.D., F.R.S.

ROBERT GORDON LATHAM, eldest son of the Rev. Thomas Latham, of Billingborough, Lincolnshire, was born in the vicarage of that village, March 24, 1812. Early in 1819 he was entered at Eton, at the bottom of school, for which he was educated by his father with the special view of a Fellowship of King's College, Cambridge.

About two years afterwards he was admitted on the Foundation; and, in May, 1829, having narrowly escaped the equivocal advantage of getting what was then called the *Montem*, went off to King's, where he took his Fellowship and degrees in the regular manner. With his Fellowship,—all the more valuable, in his eyes, for being a lay one,—he was in no hurry about a profession, and passed the first year after his B.A. degree at a little village near Hamburg, in Copenhagen, and in Christiania. This was perhaps the most important year in his life, as, during it, his reading was largely, if not exclusively, philological. Professor Carlingberg in Hamburg, and Mr. C. L. Daae, then a student, and now Professor of History in the University of Christiania, had much to do in the direction of his studies; especially in familiarizing him with the Comparative Grammar of Bopp, of which the first number was just published, and the writings, *en masse*, of the great Danish philologue Rask. His early introduction to these he has always considered a great advantage.

In 1835 he declared for Medicine, and attended the necessary lectures, those of Drs. Haviland, Bond, and Clarke, and of Professor Henslow, at Cambridge, making the most of the opportunities afforded by the Addenbrooke Hospital. In London he was a student (chiefly in the wards of his relation, Dr. P. M. Latham), at St. Bartholomew's.

Literature, however, kept *pari passu* with Medicine, or, rather, ran ahead of it. A few weeks after obtaining (in 1842) his License from the College of Physicians, he was elected to the Physicianship of the St. George's and St. James's Dispensary. He then became Lecturer on Forensic Medicine, and afterwards on *Materia Medica*, at the Middlesex Hospital. Finally (in 1844) he was elected Physician to that Institution. He always refers his promotion to the first and last of these offices to dint of canvassing, and to the effect of a general, rather than a professional, reputation for ability,—adding, with what is doubtless genuine sincerity, that he kept fitter men out of each place. In 1849 he resigned his appointments and such private practice as he had, taking leave of the active part of the profession, but ever retaining a lively sense of the value of a medical education, and a feeling of satisfaction of having followed the calling.

We must now go back fifteen years and follow his literary history, which was, of course, to a great extent, concurrent with his medical. The effect of his Scandinavian studies was to send him back to England an ardent admirer of the great Danish philologue, a strong advocate for the system of metagraphy, or transliteration as applied to alphabets other than European, and (as akin to this) a phonetic speller. Hence, during the year 1834, came out his three first literary essays—short pamphlets or tracts. 1. 'An Abstract of Rask's Essay on the Sibilants,' with his alphabet for the transliteration of the Georgian and Armenian languages. 2. 'An Address to the Authors of England and America,' in favour of Phonetic Spelling. 3. 'A Greek Grammar,' with the Greek in English characters.

Then came an edition of Cicero's 'Epistolæ ad Familiares,' and 'Ad Atticum,' with English notes. Then a time for mixing in political journalism through the Cambridge liberal paper, followed by small contributions to periodicals now extinct, in verse as well as in prose. Then, in 1838, translations of Frithiof's Saga and Axel, from the Swedish of Tegnèr. Then (in 1840) 'Norway and the Norwegians.' All this seems to have been writing for the mere pleasure of doing so. We have not heard that any of these lucubrations were even mistaken for a work that "no gentleman's library should be without." In his translation of Frithiof's Saga, a notable share was taken by his old school-fellow and brother-in-law, Professor, now Sir Edward, Creasy; indeed the work is a

joint production. In 1839, the resignation by Professor Rogers of the Chair of English Language and Literature, in University College, London, left a vacancy, which Mr. Latham was chosen to fill up. The result was his first work of any note, 'The English Language,' published in 1841. Though this appointment fixed him for the greater part of the year in London, he was still able and willing to pass the vacations in Cambridge; and it was not until he took his license that he cast anchor for good in London.

To the Transactions of the Philological Society, established in 1843, he was an early and a somewhat liberal contributor, writing miscellaneous papers on outlying subjects, *de omnibus linguis et quibusdam aliis*: translator, too, of Sydenham for the Sydenham Society, and, what looks more like a literary man, *ex professo*, a regular contributor to the 'Morning Chronicle,' then under the political influence of Sir John Easthope, and the editorship of his son-in-law.

Largely modified by his medical education, his Philology gradually developed itself on the side of Ethnology, and in the eyes of many has, of late, become merged in it. In 1844, he attended the York Meeting of the British Association 'for the Advancement of Science, and in conjunction with Drs. Prichard, Hodgkin, and King, worked hard in getting Ethnology recognized as a subject sufficiently scientific to be allowed a place at the meetings. At first it was attached to Medical Science, with which it amalgamated badly. Eventually, however, it joined partnership with Geography; Geography itself associated with Geology, having been nearly swamped by its more popular rival. In 1850 he published 'The Varieties of Man,' followed by 'The Germania of Tacitus, with Ethnological Notes,' and somewhat later by 'Man and his Migrations,' 'The Ethnology of Europe,' 'The Ethnology of the British Colonies,' and 'The Ethnology of the British Islands,'—these four last small works. Meanwhile, his 'English Language' had been reproduced in several smaller volumes, and adapted, in different forms, for schools and scholars of various kinds. In 1852 he undertook the direction of the Ethnological Department of the Crystal Palace, the whole plan, of which his was only a part, being a noble one. Its general character was sketched in a vigorous, though rough draft, by the late Edward Forbes, and approved by Sir Joseph Paxton. An adequate, not to say liberal sum, was to be devoted annually for Natural History—Natural History

meaning Zoology, Palæontology, Botany, and Ethnology. The grouping was to give the plants, the animals, and the human inhabitants of the different parts of the world in an accurate geographical association. Of the work hitherto done, it may fairly be said that it is sufficient to show that the great difficulties connected with so bold and comprehensive an undertaking were not insurmountable.

'The Native Races of the Russian Empire' (published, as we may guess *à priori*, in the year of the Crimean War), and a largely annotated edition of Prichard's 'Eastern Origin of the Celtic Races,' were followed in 1858 by 'Descriptive Ethnology,' for which the account of Polynesia and America has still to be written; this last being followed, in 1862, by 'Comparative Philology.'

Concerning Dr. Latham's opinions upon the higher questions connected with the Natural History of Man, we find little that is either very definite or very explicit. He seems to prefer the delivery of facts and the exhibition of methods to general theories, and is often silent where a decided opinion is expected. From two papers, however, an article in the 'Philosophical Journal,' and another on the Antiquity of Man, in the 'Westminster Review,' the general bias of his opinion may be ascertained. In the first, he commits himself to the doctrine that definite classes are obtained only when there has been an obliteration of transitional forms; in the second, he holds that the origin of protoplasts is extra-scientific, and that it must rest, not on inference, but on specific historical evidence, being a physical effect without any cause within the range of physical induction. Consistency in these views must of course make the origin, as well as the antiquity of man, an open question at the very least.

The *opus magnum*, however, of Dr. R. G. Latham,—a new edition of Johnson's Dictionary, which has been for some years in his hands,—is to be published, we believe, within a few weeks.



WILLIAM FERGUSSON, F.R.S.

WILLIAM FERGUSSON was born at Prestonpans—celebrated as the scene of Johnny Cope's rapid ride—in the year 1808. He received his early education first at a local school, and subsequently at the High School of Edinburgh and the University. When the time came to fix upon a profession, he turned his attention to the law, and actually began to study it; he soon however tired of that, which seemed very dull work, and betook himself to the more congenial pursuits of anatomy and surgery. At this period, Dr. Knox, one of the most extraordinary men of his day, was in the height of his reputation as an anatomical teacher, holding this position until the period of the Burke and Hare business, when an excited mob attacked his dissecting rooms, under an absurd idea that he was not ignorant of the manner in which the unfortunate victims of these wretches had met their death. An especial feature in Knox was his power of instilling into his pupils a somewhat similar kind of love for anatomy as existed in himself; and young Fergusson soon became a devoted admirer both of the great artist who took so much pains to teach, and of the pursuit itself. In course of time he went through his studies, took his surgical diploma before he was twenty-one, and in another year passed the examination for the Fellowship of the College of Surgeons, the highest distinction a surgeon could obtain. Knox's reputation as an anatomical teacher was now so great that he required some one to assist him in his arduous work, and he at once offered terms to his old pupil Fergusson, who entered heart and soul into his work, and began to lecture both on anatomy and surgery, and thus laid the solid foundation for the great success which followed in after life. He was soon in great repute, both

as a Teacher of Anatomy and as a Surgical Practitioner, and it was evident that although so much younger than either of them, he would shortly be the competitor with the great chiefs of Edinburgh surgery, Liston and Syme; but after a period of little less than ten years from the date of his career as a public teacher, during which time he had become married to a lady of property, and had been acquiring a good practice, an event which turned out to be the most important in his career occurred. The dirty, shabby-looking old workhouse of St. Clement Danes, at the corner of Portugal Street, was taken by the authorities of King's College, London, which had rapidly obtained great repute as a Medical School, and converted into a hospital containing 120 beds. Here was an opportunity for a young and enterprising surgeon to distinguish himself, and Fergusson determined to cast in his lot with the many others who were trying for the post; and such was his well-known character in Edinburgh, that he was at once elected Professor of Surgery in King's College, and Surgeon to the Hospital. This happened in the year 1840, when Mr. Fergusson was only thirty-two, and he had to betake himself and his household goods to the great metropolis and to commence his career over again in the midst of formidable difficulties; for it must be borne in mind that a certain number of years must elapse before the most skilful surgeon can make way in a place like London, and a large expense was of necessity entailed upon Fergusson in removing, and keeping up an appearance suitable to his position. The celebrated Robert Liston had a few years previously adopted the same course, by removing from Edinburgh to the University College, and he, after a sharp struggle, was meeting with great success, and holding a most prominent position amongst the giants of surgery, of whom there were then not a few. Sir Astley Cooper, Brodie, Guthrie, Key, Lawrence, and Tyrrell, with a host of others, were carrying off the prizes of their calling, and apparently leaving little room for any one else, however enterprising; but Fergusson had not shown himself long in the wards and operating theatre of King's College Hospital, before he began to attract universal attention to his extraordinary feats of surgery. Those who witnessed his operations were struck with the manner in which he accomplished them, and his reputation began to spread rapidly. Most severe cases were brought to him for operation, and amongst others, in the year 1843, was a young woman who had the most

extensive disease of the upper jaw ; she had been an inmate of one of the London Hospitals, and under the care of one of the most celebrated surgeons of the day, but nothing was done for the poor woman, who, hearing of Fergusson's repute as an operator, betook herself to King's College Hospital. As a skilful surgeon, he did not hesitate, but determined to perform the hazardous and then little known operation of removal of the entire upper jaw on one side. This proceeding was accomplished in the most masterly manner before a large crowd of medical men, and the patient made an excellent recovery. Perhaps no single case of surgery did more good to Fergusson than this, although he was surely and rapidly gaining ground and outstripping his numerous competitors in the race of fame, who in various ways evinced no little jealousy of the young *parvenu* from the north country. After a few trying and anxious years, practice began rapidly to come in, and this was greatly increased by the death, first of Liston, who died in 1847, and secondly, of Aston Key, who was carried off by cholera in 1849. Sir Benjamin Brodie was at this time, and for some years afterwards, the leader in surgery ; but with this one exception, the subject of our memoir stood forward as the first, and as an operator certainly the most prominent, since the deaths of Liston and Key ; and now since the decease of Brodie, he is looked upon by universal consent as the foremost surgeon in Britain.

As might be expected, Mr. Fergusson has acquired all the honours which it is possible for a man in his position to obtain. He is an F.R.S., both of Edinburgh and London. He was in 1848 elected Surgeon Extraordinary, and in 1849 Surgeon in Ordinary to the late Prince Consort, and a few years later was made Surgeon Extraordinary to Her Majesty. He was appointed Examiner in Surgery to the London University, and in 1861 he was elected on the Council of the Royal College of Surgeons. This latter event is perhaps one of the most memorable in his career, and if we mistake not, one of the most pleasing, for it took place under most peculiar circumstances, and evinced in what high estimation he was held by his professional brethren.

A seat on the Council is the height of every eminent surgeon's ambition, but according to the bye-laws of the charter of the College, granted in 1843, a surgeon, whatever be his eminence or skill, must be a certain number of years a member of the College

before he can be a candidate for the Council ; now as Fergusson did not pass his examination until 1840, the year he came to London, it can be readily understood that there were a great many men senior to him who availed themselves of their position and right to become Councillors ; consequently some surgeons of much less repute but more advanced in years than Mr. Fergusson became elected, whilst many others, still his seniors, were awaiting their turn, and in the natural course of things several years would elapse before his candidature.

For some years, it had been felt by many that notwithstanding his being a junior, Mr. Fergusson's eminence in his profession fully entitled him to a seat on the Council ; but the elderly gentlemen who constituted that body did not wish their old rule to be broken through. Several of Mr. Fergusson's friends, however, amongst whom were some of the most active and influential junior Fellows of the College, determined to bring his name forward in 1861. The contest was a keen one, for it was well known that the whole body of Councillors, sticking to their ancient traditions, had banded themselves together to prevent one so far out of his turn from coming amongst them, and the influence of these gentlemen was very great, but they strove in vain ; Mr. Fergusson's high professional and personal character gained him the day, and much to the chagrin of the board he was elected a Councillor. It is however very evident that these gentlemen have become more than reconciled to his presence amongst them, for he has been recently elected Professor of Surgery to the College of Surgeons, and this election was made by the very body who so strenuously opposed his introduction amongst them.

Although Mr. Fergusson's time has been mainly spent in the active duties of his profession, he has contributed in no slight degree to its literature. In 1840 he brought out his work on Practical Surgery, which at once took a high position amongst the standard works, as is evinced by the issue of three other editions since that period. This book is much resorted to as a text-book by his pupils, as well as by surgeons in every part of the globe. In 1845 he published his paper on Staphyloraphy, or the operation for Cleft Palate, a beautiful application of Anatomy and Physiology to the surgical relief of one of the most distressing deformities to which man is liable. Before his views and practice were made known and resorted to, all was dark and uncertain regarding the

treatment of this malformation ; but the mode of operation adopted by Mr. Fergusson has proved to be most successful, and if he possessed no other claim, this beautiful discovery alone would entitle him to the highest rank of scientific surgery. Other papers on Practical Surgery have from time to time been published by him in the Transactions and Journals.

Mr. Fergusson has more particularly distinguished himself in connection with two of the most important operations in surgery which have of late years been practised, viz. excision of the head of the femur in old and incurable cases of hip disease, and excision of the knee in like instances of disease in that joint. Each of these operations had been occasionally performed many years ago, but they had become abandoned, and the unfortunate subjects of these complaints were left to die in the one instance, or undergo amputation of the thigh in the other. Mr. Fergusson revived the first-mentioned operation in the year 1845, and the latter in 1850. Great opposition was excited against both these proceedings, but, thanks to the unwearied energies of Mr. Fergusson, and of those surgeons who followed in his footsteps, they have both become recognized operations in surgery, and wooden legs are much more rarely seen than formerly. Mr. Fergusson has highly distinguished himself also in connection with the subject of Lithotomy and Lithotrity, the simplest and most efficient instrument for performing the latter operation being his own invention.

Perhaps it may not be out of place to compare the subject of this memoir as a great surgeon with a man to whom he was similar in many points, and of whose surpassing surgical attainments he was a most devoted admirer,—we allude to the late Robert Liston. They were both educated in the same school, and each seemed to be imbued with the same intense love for anatomical and surgical pursuits. Both of them were singularly gifted by nature with that manual dexterity without the possession of which it is impossible for a man to be a good surgeon in the amplest sense of the word, and consequently they both became most brilliant operators ; indeed, to no two men is operative surgery more indebted for the perfect state to which it has now been brought than to Liston and Fergusson. As an operator, Liston has never been surpassed, but Fergusson may well be considered his equal. It is true Liston possessed a more powerful frame and more strength of hand than does Fergusson, but in all other

respects there was little difference between them. Liston's temper was hasty, and at times he possessed little self-control, consequently he was led into one or two rash errors which would have seriously damaged a less eminent man. Fergusson's calm temper and perfect self-control effectually prevent him from judging or acting rashly, and here he had the advantage over Liston; and it is a question whether Fergusson's personal qualities would not have caused him to outstrip his gigantic rival in public estimation, had the latter been spared for many years longer.

Mr. Fergusson possesses all the qualities necessary to form a great surgeon, both physically and morally. He is tall and well-developed, and very active, and wields that best of all surgical instruments, a well-formed and massive right hand, with great power, yet with singular precision and gentleness, so that the master-spirit which guides it is as perceptible in the most delicate of surgical manœuvres, as in those calling for the exercise of the greatest power and energy. He possesses a remarkable eye for detecting and discriminating the varied forms of surgical disease which present, and although, like the majority of his countrymen, slow and cautious in expressing an opinion, it is evident to those who have watched him at the bedside, that he quickly decides in his own mind as to the nature of the case.

He has a wonderful self-control, and possesses a serenity of temper which is scarcely ever ruffled under the most trying circumstances. Intent on his work, and firm in purpose, he rapidly acquires the confidence both of the patients and of the professional men to whose assistance he is so frequently called in the most trying emergencies.



SOLOMON ALEXANDER HART, R.A.

SOLOMON ALEXANDER HART was born at Plymouth, in Devonshire, —a locality that has probably furnished more artists than any other in the kingdom,—in a county that is notorious for its singular indifference and apathy towards the cultivation of arts. In his day, Prince was so proud of the products of his county as to have chronicled a history of the more celebrated of his “Worthies of Devon.” At a later period Brockedon, a native of Totness, was wont to say that the only countenance ever shown him was the purchase of one of his sketches, which, as a presentation, served the purpose of an electioneering bribe; while, from the commencement of his career, Haydon was left totally unheeded, and other artists lived to see the preference given to strangers of inferior pretensions and talents,—exemplifying again the force of the adage of the lacking of honour to the prophet in his own country. There is now no chronicler for the worthies of the county; and it is almost the only county in the kingdom unrepresented by any annual exhibition of fine arts in any one of its towns.

Amid such local disadvantages of means of training, the subject of this notice left his native town for the great metropolis in the year 1820, with the intention of becoming a pupil of Mr. Charles Warren, then celebrated as an engraver of book-prints from illustrations by Smirke, Stothard, Westall, and others of the literature current at that time.

The earliest instruction the artist received was at the hands of his father, Mr. Samuel Hart, a person of considerable intelligence, who had studied miniature painting under Mr. Abraham Daniels, a miniature painter, a native of Bath, who, like the Italian artists of the middle ages, combined with the painter’s art the practice

of jewellery, chasing, the art of setting precious stones, and engraving. In Bromley's 'Catalogue of British Engravers' the elder Mr. Hart is mentioned as the engraver of certain figure-subjects, though it does not appear that he pursued this branch of the art to any great extent. He drew from the antique in London, under the auspices of James Northcote; but he soon quitted London and the fine arts to return to Plymouth, to fulfil an engagement he had contracted with the mother of the subject of our present memoir. The experience and knowledge which he had derived from previous essays in fine art were communicated to his son, and served as the basis of an art education which was afterwards to undergo the discipline supplied by an organized school of art. The negotiations with Mr. Charles Warren, and afterwards with Mr. Scriven, a chalk or stipple engraver, having gone off, Mr. Hart in 1823 entered as a probationer into the schools of the Royal Academy, received in due course his ticket as a student, studied afterwards in the Life academy, but did not make use of the Painting school for any other purpose than investigating the motives of such pictures as were from time to time lent to this department, believing that copying servilely from a variety of styles and various practices only tended to promote torpor of those powers that should be exercised in the investigation of principles; and that copying, at best, only cultivated mechanism and terminated in manufacture. Like most persons emerging into active life, Mr. Hart had, in addition to the struggles and vicissitudes of a professional career, the charge of domestic duties. On reference to the Exhibition Catalogues of the Royal Academy, we find some of the earliest productions of his pencil miniatures, among which may be noticed the miniature of the parent to whom, as we have said, he owed his earliest indoctrination in his profession.

The repetition of the motives and the construction of the miniature, and the commonplaces to which such a devotion of time would lead, were little in accordance either with the tastes or the ambition of the youthful artist, who craved for more extended dimensions on which to expatiate, and sought themes of more general interest than the gratification of personal vanity or the record of the casualties of nature. Accordingly, in 1828 his first picture in oil, exhibited at the British Institution, manifested the aspirations of the painter, and met with recognition at the hands of a Mr. Hudson, who immediately purchased it from its walls. In 1830 the first of

a series of pictures, illustrative of ceremonies of the Jewish religion, exhibited at the Suffolk Street Exhibition, attracted much attention, was purchased by the late Mr. Vernon (now in the Vernon Gallery), and was followed by many commissions for other subjects as well from the Roman Catholic as the Jewish ritual. For Mr. Vernon, Mr. Wells, the late Lord Lansdowne, Lord Farnborough, and other noblemen and gentlemen then distinguished as collectors, Mr. Hart continued a series of illustrations which, being singular in their treatment and novel in their themes, were very popular. But the artist was now anxious to illustrate some phase in history, poetry, or fiction. In 1833 appeared at the Suffolk Street Gallery 'Wolsey's Arrival at Leicester Abbey by Torchlight,' purchased by J. P. Ord, Esq.; and in 1834 a picture on extended dimensions, subject, 'The Quarrel Scene, from Shakspeare's Henry the Eighth, between Wolsey and Buckingham,' attracted the notice of the late Lord Northwick, in whose collection it remained until the contents of the gallery were dispersed. This was followed in 1835 by another large picture, an illustration from Sir Walter Scott's 'Tales of the Crusaders,'—the scene between Richard Cœur-de-Lion and Saladin disguised as a physician, in which the monarch is in vain advised not to drink the medicated water,—a work which won for its author the Corporation Prize of £50 from the town of Liverpool, in which place it was shown after its exhibition in the Royal Academy. It was in consequence of this production that in the month of November of the same year Mr. Hart was admitted into the ranks of the Royal Academy as an Associate, in which class he remained until the year 1841; having meanwhile, in 1836, exhibited at the Royal Academy a large picture of 'Sir Thomas Jones receiving his Father's Benediction in the Court of King's Bench,' it having been the custom of the Lord Chancellor, previous to taking his seat in the Court of Chancery, to pass into the Court of which his father was a Puisne Judge, and kneel to receive this diurnal benediction. This picture was purchased by Alderman Salomons, and is now a conspicuous feature in the gallery at Broom Hill, Tunbridge Wells.

In 1839 two smaller pictures only appeared, one, entitled 'An Early Reading of Shakspeare,' was afterwards lodged by the artist as his diploma presentation work on being elevated to the rank of an Academician,—an event that took place in the month of February, 1841, consequent on the appearance of the

artist's largest picture and most extensive composition, 'The Execution of Lady Jane Grey on Tower Hill,' exhibited at the Royal Academy the previous year (1840).

At the end of the summer of the year 1841 Mr. Hart left England for the first time, to make acquaintance with those works of art which, while they constitute the glories of the several cities which they adorn, form to the student and the man of taste the canons of principle and codes of practice of the art. Having passed through Paris and visited the Louvre, our artist sought without unnecessary delay the *chefs-d'œuvre* of the most distinguished masters in the strongholds or chief localities of their practice in Italy. Passing through Turin and Milan, after beholding the glories of the Brera, inspecting the Eclectics at Bologna, and Correggio at Parma. Florence,—the cradle of the Arts, as it has been justly termed,—detained him some weeks with the fascination that church, monastery, and gallery present in fresco and oil picture, from the so-called revival to the latest days of practice. Pisa, with its Campo Santo, offered great interest in some of the earliest, as Rome did of the later times; from Giotto to Raphael,—the Alpha and the Omega of art practice. Returning from Naples by way of Rome, the Tuscan territory, (after visiting Perugia and Assisi,) with the towns of Arezzo, Siena, Pistoia, etc., all contained matters of illustration in Art history. Proceeding homeward by way of Florence to Forlì, across the Apennines from the Mediterranean to the Adriatic, Ravenna gave another exemplification of the prowess of Giotto, as well as the degree in which the shepherd-painter availed himself of the Byzantine mosaic wall-picture. Nor was this influence unfelt in Padua, where, after having left Ferrara, the works of Giotto and his school again appear. The Arena, the Church of the Santo, were in striking contrast, in motive as well as in conduct, with the works in fresco by Titian. In Venice the most accomplished efforts of the great school of colourists can alone be estimated, to an efficient appreciation of which a journey in the Friulian Alps formed a good preparation. Treviso, Castel Franco, Bassano and its neighbourhood, attested the origin of many of the motives of the pictures from the hands of her native painters. Not only colour, but in the architectural forms supplied by the palaces of Venice, Verona, Vicenza, the antiquities of Brescia, and in the intermediate villages, every place supplied or teemed with evidences of artistic inspiration, often explaining the origin of

much with which we accredit the author for originality of design or ingenuity in contrivance. Returning home at the end of the year 1842 through the Tyrol, after a tour of sixteen months, by way of Munich, the art condition of that city was expressive rather of the reproductive than the originative spirit of her artists, and the strong German analytic spirit fostered by the Poet-King Ludwig has, at least, the merit of having set up the Tuscan metropolis as the model for her own capital city. To the inquiring student a visit to the German and Rhenish cities, if made after the tour of those of Italy, is deeply instructive of the source of the excellence beheld in the architecture and painting of the last generation in Germany. The works of Rubens and Vandyke, whether in the Pinacothek at Munich, or in the churches or gallery of Antwerp, instruct in the degree in which Rubens had looked at Michael Angelo, and together with his pupil Vandyke, had both studied the colour of Titian.

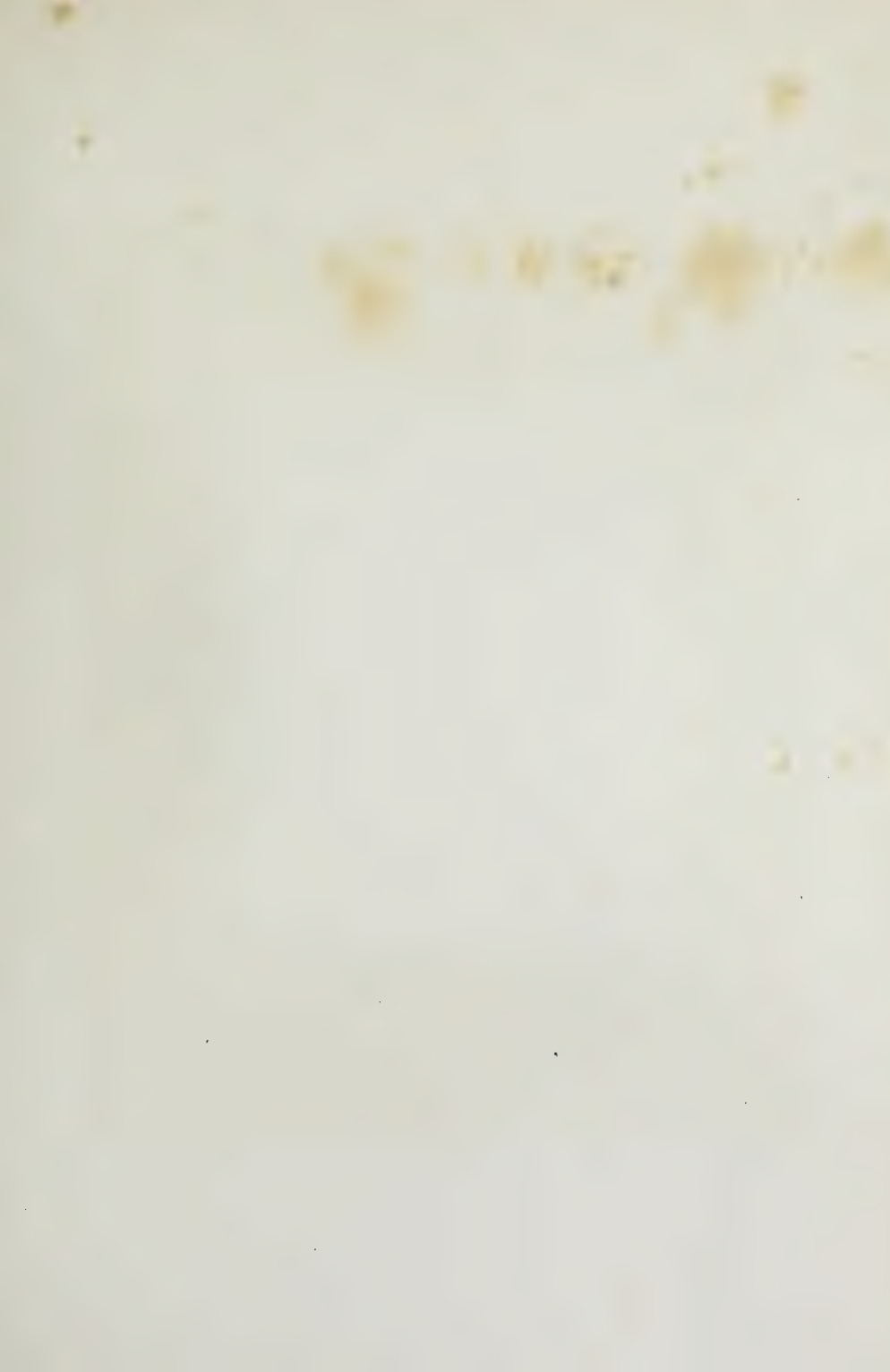
There is a unanimity of opinion on the value of foreign travel at a time when the artist has arrived at something like a resolution in his own practice, after many trials, successes, failures, and the experience they bring. Then it is that he is capable of estimating the labours and the excellences of those who have preceded; he is then enabled to estimate the motives of every square inch of their productions; then it is that he is enabled to ascertain their degrees of originality; then it is he can estimate the relative values of schools conspicuous for widely differing qualities. Time thus spent brings with it better consequences than slumbering over a copy of some favoured picture, or pursuing desultory studies in various towns, or in setting up an easel to perpetuate the ethnography of the Trinità del Monte steps, often at most but imperfect counterfeits of the neighbouring peasantry, the mere hackneyed model decked out in mimicry of the actual *contadini*, often in costumes and in properties at variance with, or in contradiction of the veritable costumes special to the different villages or mountain cities of the Pontificate or the Regno.

We have stated that Mr. Hart first attracted attention by his series of pictures illustrative of the ceremonies of the Jewish religion. After his sojourn in Italy he returned with increased power to this class of subjects. Between 1843 and 1853 appeared 'Simchath Torah, or Festival of the Law,' 'Scene in a Polish Synagogue,' etc., followed by numerous subjects from the Old Testa-

ment, such as 'Hannah the Mother of Samuel and Eli the High Priest,' 'Solomon pondering the Flight of Time,' 'Righteousness and Peace,' etc. Mr. Hart has, however, embraced many other subjects, including especially history and biography, among which may be noted his 'Galileo observing the Oscillations of the Lamp in the Cathedral of Pisa,' 'Milton visiting Galileo in the Prison of the Inquisition,' 'The Parting of Sir Thomas More and his Daughter,' 'The Three Inventors of Printing, Gutenberg, Fust, and Schöffer, studying the Invention of Moveable Types.' Mr. Hart has also produced several characteristic Shakspearian pictures, 'Othello and Iago,' 'Jessica,' etc.; and a few striking portraits, among which may be mentioned those of the Duke of Sussex and Sir Anthony Rothschild for the Jews' Hospital, Sir Moses Montefiore for another Jewish Institution, and Alderman Salomons for the Guildhall.

When, on the retirement of Mr. Leslie from the office of the Professorship of Painting in the Royal Academy, that office became vacant, it was suggested to Mr. Hart that he should offer himself as a candidate, and in consequence he was elected, and delivered his first course in 1855,—his previous journey in Italy having qualified him for the duty of preparing a set of papers, which he continued to deliver until the close of the season of Academic teaching in March, 1863.

His lectures during this period "show," says a contemporary, "that he not only possesses adequate professional learning for the office, but that by his earnest inculcation of intellectual exertion, of the necessity of a wide range of study, constant reference to the fundamental principles of art, observation of the predominant sentiment and essential characteristics of a composition, and of reflection, discrimination, and self-reliance in choice of subjects, he is a valuable guide-monitor to the enthusiastic student at the commencement of his career."





ROBERT BROWNING.

A POET who, at the age of fifty, can look back with satisfaction to thirty years of the inspiration of his muse, and to the third edition of his collected works, may fairly be said to have attained a point of eminence in literature. There are few writers of verse, however, whose earnest thoughts and high imaginings have been less promptly understood, and appreciated as the emanations of a poetic genius, than those of Robert Browning. His dramas, notwithstanding the advantage of having an admiring and zealous exponent, kept but a brief existence on the stage; his poems, extolled by some, were denounced by others as being of the mystical and spasmodic school, and one able critic went so far as to describe them as incomprehensible,—annoying the judgment by obscurity, and offending the ear by discord. “But we have read most of the pieces with pleasure,” adds the same authority, “because we like to hear what a thoughtful, generous man has to say on a variety of subjects.”

Robert Browning was born in 1812, at Camberwell, and received his education at the London University. Music, painting, and the drama have in turn occupied his thoughts, and some of the best years of his life have been spent in Italy, in the society of a wife of yet higher poetic genius, Elizabeth Barrett Browning, who died in 1861.

Mr. Browning's first published work, ‘Paracelsus,’ a poem in five scenes, appeared in 1835. It is founded on Renauldin's history of one of the travelling *litterati* of the early part of the sixteenth century, who spent their days in wandering from country to country, predicting the future by astrology and cheiromancy, evoking apparitions, and practising magic and alchemy; and was

inscribed by its author to his affectionate friend Amédée de Ripert-Monclar. Two years later, Mr. Browning appeared in the more difficult and arduous character of a tragic dramatist. In May, 1837, was produced at Covent Garden Theatre his historical tragedy of 'Strafford,' supported in the delineation of its principal characters by Macready, Vandenhoff, and Helen Faucit. It was not very successful. As an acting play, the interest fails after the third act, when Strafford is overthrown. The fourth act, in which he does not appear, somewhat lingers on the stage, amid the plots for his destruction and the vacillation of the King; and though his prison scene is touching, our sympathies are not sufficiently aroused for Charles, who is drawn more weak and treacherous throughout than even adverse history represents him. Mr. Browning made large amends, however, for this apparent want of sympathy for the royal martyr by his spirited 'Cavalier Tunes:—

" God for King Charles! Pym and such carles
 To the Devil that prompts 'em their treasonous parles!
 Cavaliers, up! Lips from the cup,
 Hands from the pasty, nor bite take nor sup,
 Till you 're marching along, fifty score strong,
 Great-hearted gentlemen, singing this song."

In 1840 appeared 'Sordello,' a poem in six books, and in 1841 the drama 'Pippa Passes,' with the following inscription:—"I dedicate my best intentions in this poem, admiringly to the author of 'Ion,' affectionately to Mr. Serjeant Talfourd." Its opening is highly characteristic of what has been termed Mr. Browning's spasmodic style of utterance, full, however, of poetic fervour:—

" Day!
 Faster and more fast,
 O'er night's brim, day boils at last;
 Boils, pure gold, o'er the cloud-cup's brim
 Where spurting and supprest it lay—
 For not a froth-flake touched the rim
 Of yonder gap in the solid gray
 Of the eastern cloud, an hour away;
 But forth one wavelet, then another, curled,
 Till the whole sunrise, not to be supprest,
 Rose, reddened, and its seething breast
 Flickered in bounds, grew gold, then overflowed the world.

“ Oh, Day, if I squander a wavelet of thee,
 A mite of my twelve-hours' treasure,
 The least of thy gazes or glances,
 (Be they grants thou art bound to, or gifts above measure
 One of thy choices, or one of thy chances,
 Be they tasks God imposed thee, or freaks at thy pleasure)
 —My Day, if I squander such labour or leisure,
 Then shame fall on Asolo, mischief on me !”

Mr. Browning's next production, in 1842, was a tragedy, entitled ‘ King Victor and King Charles,’ founded on some stirring events in Italian history during the middle of the last century, between Victor Amadeus, first king of Sardinia, and his son Charles Emmanuel, Prince of Piedmont. In 1842 he published his first volume of collected poems, under the title of ‘ Dramatic Lyrics ;’ and it was followed at intervals of three and ten years by his ‘ Dramatic Romances,’ and ‘ Men and Women,’ all of which are now dedicated “ to their promptest and staunchest helper,” John Forster. In 1843 Mr. Browning produced two acting tragedies of considerable poetic merit—‘ The Return of the Druses,’ and ‘ A Blot in the ’Scutcheon.’ The latter was represented on the stage of Drury Lane Theatre, but with only moderate success. Then came his play of ‘ Colombe's Birthday,’ dedicated in the following manner to Mr. Bryan Procter :—“ No one loves and honours Barry Cornwall more than does Robert Browning ; who, having nothing better than this play to give him in proof of it, must say so.” The last of Mr. Browning's acting tragedies, ‘ Luria,’ appeared in 1846, dedicated in the plenitude of his enthusiasm, with extravagant eulogy, to Mr. Landor :—“ I dedicate this last attempt for the present at dramatic poetry to a Great Dramatic Poet ; ‘ wishing what I write may be read by his light :’ if a phrase originally addressed, by not the least worthy of his contemporaries, to Shakespeare, may be applied here, by one whose sole privilege is in a grateful admiration to Walter Savage Landor.”

Two other dramatic poems of less pretension,—‘ A Soul's Tragedy,’ Part First being what was called the Poetry of Chiappino's Life, and Part Second its Prose ; and ‘ In a Balcony, a Scene,’—complete the list of Mr. Browning's productions in this branch of poetry. But in 1850 a spirited poem, of between two and three thousand lines, made its appearance, with the title ‘ Christmas Eve and Easter Day,’ commencing in the following somewhat eccentric style :—

“ Out of the little chapel I flung,
Into the fresh night-air, again.
Five minutes I waited, held my tongue
In the doorway, to escape the rain
That drove in gusts down the common's centre,
At the edge of which the chapel stands,
Before I plucked up heart to enter.
Heaven knows how many sorts of hands
Reached past me, groping for the latch
Of the inner door that hung on catch,
More obstinate the more they fumbled,
Till, giving way at last with a scold
Of the crazy hinge, in squeezed or tumbled
One sheep more to the rest in fold,
And left me irresolute, standing sentry
In the sheepfold's lath-and-plaster entry,
Four feet long by two feet wide,
Partitioned off from the vast inside—
I blocked up half of it at least.
No remedy ; the rain kept driving.”

The latest and most singular episode in Mr. Browning's literary career was the publication, in 1852, of a long introductory Essay, accompanying twenty-five letters alleged to be from the pen of Percy Bysshe Shelley, which afterwards proved to be forgeries. Mr. Browning edited the volume in which these letters appeared at the invitation of the late Mr. Moxon, the publisher, who bought them at a sale, and the clever deception was a great annoyance to both. The discovery of the forgery was made accidentally by Mr. Palgrave, while on a visit to Mr. Tennyson. Happening one day to be turning over the pages of a copy of Mr. Moxon's volume that had been sent to the Poet Laureate, Mr. Palgrave suddenly recognized, in a letter set forth as having been written by Shelley from Florence to Godwin, a portion of an article written more than ten years before by his father, Sir Francis Palgrave, for the 'Quarterly Review.' Inquiries were set on foot by a literary detective, most of the letters proved to be of spurious manufacture, and the volume had to be suppressed, along with a similar volume of alleged letters of Byron, which proved also to be forgeries by the same skilful hand.



JOHN EDWARD GRAY, PH.D., F.R.S.,

KEEPER OF THE ZOOLOGICAL COLLECTIONS OF THE BRITISH
MUSEUM.

DR. J. E. GRAY and his ancestors of three generations are identified in no unimportant degree with the progress of the study of natural history in this country. Born at Walsall, in Staffordshire, on the 12th of February, 1800, he is the second son of Samuel Frederick Gray, author of the 'Supplement to the Pharmacopœia,' including the first well-marked extension and improvement of Ray's method of the Natural Arrangement of Plants, whose father was translator of the 'Philosophia Botanica,' and whose uncle, grand-uncle of Dr. J. E. Gray, was Dr. Edward Whitaker Gray, Secretary of the Royal Society, and one of the Trustees of the Hunterian Museum, and Curator of the then-called "Natural and Artificial Curiosities" of the British Museum.

While assisting his father as a pharmaceutical chemist and surgeon, John Edward Gray formed a strong predilection for his pursuits in natural history. He made frequent excursions into the country to collect and examine animals and plants, and in 1817 was elected by his fellow-pupils to undertake the lectures of a botanical class that had been founded in the neighbourhood by Mr. Salisbury, partner of William Curtis, author of the 'Flora Londinensis' and founder of the 'Botanical Magazine.' His father being compelled by ill-health to retire from business, Mr. J. E. Gray entered as an assistant, at the age of eighteen, the laboratory of Mr. Willat, chemist, of Fore Street, Cripplegate. Shortly afterwards he commenced a course of medical studies as a pupil of St. Bartholomew's and the Middlesex Hospitals, and at the private school of Mr. Taunton, in Hatton Garden and Maze Pond,

where he and his father subsequently delivered lectures on botany with the view of teaching the Jussieuan method.

In the same year, 1816, Mr. Gray becoming accidentally acquainted in one of his rambles with James Francis Stephens, the British entomologist, was introduced by him to Dr. Leach, who then had the care of the zoological collections of the British Museum. Dr. Leach greeted with enthusiasm a young man, whom he perceived to have a knowledge of the works of Cuvier, Lamarck, and Latreille, and offered him every facility for study. He introduced him to Sir Joseph Banks, who, with his well-known liberality, gave him free access to his extensive natural history library in Soho Square, and there he made the acquaintance of the leading scientific men, including Sir Everard Home, Professor De Candolle, Burchell, and others. It was in Sir Joseph Banks's library that young Gray prepared the papers on the "Annual Progress of Botany" which appeared in Thompson's 'Annals of Philosophy,' as well as the systematic portion of the 'Systematic Arrangement of British Plants,' which was published, under his father's name, in 1821. This was the first work in the English language on the Natural Method of Arrangement; and when proposed by some friends, knowing him to be the author of it, for election into the Linnean Society, he was black-balled on account of his being opposed to the Linnean system, although the celebrated author of 'Systema Naturæ' had no more ardent an admirer, and had himself published and was predisposed in favour of the Natural Method.

This opposition, as Dr. Gray stated some years afterwards at a Linnean Anniversary Dinner, was a great stimulus to his advancement in the study of the natural sciences, leading him to withdraw from the medical profession as soon as opportunity offered. At the British Museum he made the acquaintance of several naturalists of eminence, including among foreign visitors Cuvier, De Blainville, and Spurzheim, and was deputed by Dr. Leach to show them some of the sights of London. Often has Dr. Gray related the circumstance of his taking Cuvier to the hustings of the Westminster Election when Captain Murray was the Tory proposed, and the great French naturalist had to make a hasty retreat to escape the missiles intended for the obnoxious candidate.

Dr. Leach was now succeeded at the British Museum by Mr. Children, who, being impressed with Dr. Gray's zeal and interest

in natural history, invited him to assist in preparing a Catalogue of the Reptiles. This engagement was prolonged, and by gradual promotion he attained the post of Keeper of the Zoological Department of that Institution, which appointment he still holds. The chief cause of his success in the large increase and systematic arrangement of the collections under his care has been the catholicism of his taste, having no predilection for any one series of animals more than another, but a desire to collect all that came in his way and to make the specimens as speedily as possible available to the student.

Dr. Gray was Secretary of the old Entomological Society that merged into the Zoological Club of the Linnean Society and expanded subsequently into the Zoological Society of London, of which he is a Vice-President and has contributed largely to its publications. He has been also Secretary and President of the present Entomological Society. He was also President of the Botanical Society, as having been the introducer of the Natural Arrangement of Plants into England. He is a Fellow of the Royal, Linnean, Geological, and Geographical Societies, and an honorary member of the Academies of Moscow, Rome, and Ratisbon. By the University of Munich he was elected an Honorary Phil. Dr., for having formed "one of the largest zoological museums."

The scientific public are indebted to Dr. Gray for the commencement of a long series of Catalogues of the different sections of the Zoological Collection in the British Museum, which are the nearest approach to a 'Systema Naturæ' that we can expect in these days; they are prepared, as was explained in his evidence before the Parliamentary Committee on the British Museum, on the plan of engaging the person best acquainted with the subject that could be procured, to make the Catalogue, at a fair remuneration to be fixed beforehand, with as little official interference as possible, so that the author knows that he will have whatever credit he deserves. The plan has been eminently successful, producing excellent works, which have excited the admiration and envy of the officers of other Institutions, and have been imitated in France, Germany, and Holland, and in some of our local or special Museums; and further, the plan has since been followed by the Master of the Rolls, in editing the Calendars of State Papers and other official documents, and by Sir W. J. Hooker in preparing the Colonial Floras.

When change of occupation was necessary for the purpose of re-

laxation, Dr. Gray used his exertions to extend Education and Science among the people at large, and whatever he believed would be beneficial to the rising generation. He strongly advocated in his Papers, and especially before the different Parliamentary Committees, the more liberal opening of the British and other Museums, Galleries of Art (especially Hampton Court and the Gardens at Kew), declaring, from what he had observed, that English visitors were to be trusted with the care of such exhibitions, even without the strict police supervision that was used on the Continent; and experience has proved the truth of the position. He has also advocated the establishment of Parks and Playgrounds near large cities; the establishment of small well-arranged Museums of the more interesting animals in the Provinces, and especially on the outskirts of London; and the institution of comfortable, well-formed, and even decorated coffee and tea houses, for the use of the public, as rivals to the richly-embellished gin palaces and dancing saloons, which are supported by a rich and powerful trade organization.

While residing at Blackheath, he established a Mechanics' Institution at Greenwich, giving Lectures, and making excursions with the Members in the evening, after his return from the Museum; thus introducing the Members to the Book of Nature at first hand, and teaching them how to observe, in the way which has since been dignified with a name and called Field Naturalist Clubs. This Institution is now, after more than thirty years, one of the few that still prospers and keeps to its object. It has a large Building, with a beautiful News Room, a large Library for circulation, and there is a prosperous School attached to it, all managed by the Members, who generally consist of the smaller tradesmen and workmen of the district. The great source of its success and permanence is the low rate of the subscriptions, and especially the determination of the Members from the first to depend on their own exertions, and not on the patronage and subscriptions of the richer inhabitants.

He was elected a delegate from more than one Mechanics' Institution to the Mechanics' Institution Union that was suggested by Lord Brougham, in connection with the Society of Useful Knowledge,—a suggestion that was before its time, and which has since been carried into practice in the North of England, and by the Society of Arts.

Being in the habit of visiting the Continent almost annually, to examine the different Museums and Institutions connected with Education, etc., in returning from one of these visits he brought from Hamburg, and presented it to the Royal Humane Society, a Boat, used for the purpose of recovering persons who have fallen through the ice, which have an open well in the centre, through which the person can be recovered without any fear of the boat being overset. This boat was extensively used, and has been the model from which have been derived the various contrivances now used for recovering persons from the ice and water.

The Royal Humane Society in consequence elected him an Honorary Life Member, and he afterwards brought before the Society the Memoir of M. Le Roy d'Étoile, showing the evil which was sure to arise from the use of the bellows to restore animation, especially by unprofessional persons; but he suggested a system by which the elasticity of the ribs could be used to excite respiration which had been suspended, but the Society was disinclined to adopt the suggestion to abolish the use of the bellows, as they feared it might have an injurious effect on their reputation; though it may be observed that most of the means which they now recommend should not be used, have at one period of their existence been recommended by them. This only shows the rapid increase of knowledge on this important subject.

He was an active Member of the Council of the Central Society of Education, and of the Metropolitan Improvement Society, being the colleague of Mr. Duppa, Messrs. Austin, Chadwick, and others, which were the forerunners of the Metropolitan Board of Health and Works, and the Committee of Privy Council on Education.

More lately, he opposed the attempt to introduce a decimal system of accounts with the pound for the unit, before the Royal Commission, showing that the present system of coinage and accounts was far preferable, and that the only effect of attempting to introduce such a change would be the concurrent existence of two systems for an indefinite period in the place of the excellent uniform system that is now universally used and understood. He commenced the discussion that ensued in the 'Times' by a letter, signed in defence of the "Poor Man's Penny," and he wrote many articles in the journals, and issued several pamphlets on the subject.

During the discussions on the Stamps of Newspapers, and the Reform of the Post-Office, which were inaugurated by the Duke of Richmond after the passing of the Reform Bill, he was induced to study the question, and suggested that the prepayment of the Postage by Stamps should be used for Letters as well as for Newspapers. He stated in the preface to his 'Catalogue of Postage Stamps,' apparently as a reason for collection of them, "I began to collect postage-stamps shortly after the system was established, and before it became a rage, as I took great interest in their use and extension, as I believe I was the first who proposed, in 1834, the system of a small uniform rate of Postage to be prepaid by Stamps,—having satisfied my own mind that the great cost of the Post-Office was not the reception, carriage, and delivery of the letters, but the complicated system of accounts that the old system required, and having learned from the best writers on political economy that the collection of money by stamps was the most certain and economical. It was, in fact, the mere application of the system used with regard to newspapers to letters in general."

In 1826 Dr. Gray married the widow of his cousin, a lady whom he affectionately designates, in a dedication prefixed to his edition of Turton's 'British Land and Freshwater Shells,' as "my help-mate in all my studies and all my cares," and who is the author of a useful collection in five volumes of etchings of molluscous animals, copied from various sources.



E. H. BAILY, R.A.

MR. E. H. BAILY was born on the 10th of March, 1788, at No. 1, Red Lodge Court, in the city of Bristol. His father was a ship-head carver of much ability and knowledge of art, and it may be this fact which induced in young Baily an early taste for the arts. At the age of fourteen he was placed in a merchant's office; but disliking a mercantile life, he left his situation at the age of fifteen, and commenced the world as a modeller in wax. At this time, Flaxman and Bacon were the great sculptors of the day; and it was by the inspection of a monument by the latter artist, erected to the memory of Mrs. Draper, the Eliza of Sterne, in Bristol Cathedral, that young Baily was awakened to a knowledge of what high art meant, and the importance of visiting the metropolis to pursue his studies. There was some little difficulty attending this step, but with the assistance of a surgeon of the name of Leigh, who was a lover of art, and had a high appreciation of young Baily's talent, the difficulty was overcome; and after modelling for this gentleman two designs from Flaxman's illustration of the 'Odyssey' and 'Iliad,' he reached London with a letter of introduction to the great sculptor, who instantly received him into his study.

During the first few years Mr. Baily passed in the studio of Flaxman, he devoted his days to carrying on the works of his master and patron, and his evenings to the Royal Academy schools and lectures, or preparing works for the ensuing exhibitions. His progress as a student was exceedingly rapid. Before the age of nineteen, he had secured the silver medal at the Society of Arts and the silver and gold medals of the Royal Academy, with a purse of fifty guineas, for his model of 'Hercules restoring Alcestis

to Admetus ; while 'Cupid and Pysche,' 'Hercules throwing Lycas,' a statue of 'Flora,' and 'Apollo discharging his Arrows,' models of considerable merit, formed his first exhibition groups. In 1812 his reputation as an artist was established, and overtures were made to him by Messrs. Rundell and Bridge, the great goldsmiths of that day, to occupy the post in their establishment of chief modeller,—an offer which he at once accepted.

Up to this time the greatest cordiality had existed between Baily and Flaxman ; the latter had always expressed a conviction that his pupil would become a distinguished artist, and upon hearing of Mr. Baily's decision, and fearing the consequences of his abandoning legitimate sculpture for the insignificance of silver modelling, he persisted in endeavouring to induce his pupil to reconsider the proposal ; but the agreements had been signed, and Mr. Baily shortly after left the studio of Flaxman. Flaxman's fears, however just, were not realized, for in 1817, at the age of twenty-nine, Mr. Baily produced his celebrated statue of 'Eve at the Fountain,' a statue of world-wide reputation, from which two copies were at a much later period executed ; one for the late Mr. Ellice, M.P., and the other for the late Mr. Bicknell, the original being the property of the institution in Mr. Baily's native city. Four years after the production of this work, he was elected a Royal Academician.

Before the conclusion of Mr. Baily's six years' service with Messrs. Rundell and Bridge, he was entrusted with the execution of a monument to the memory of General Ponsonby, designed by the late William Theed, for erection in St. Paul's Cathedral. The death of Mr. Theed threw this work into Mr. Baily's hands, and so ably was it carried out, that he received the thanks of the committee, and was recommended to the execution of the sculpture which enriches the Picton Memorial at Cardiff. After passing five years with Messrs. Rundell and Bridge (whose business was rapidly declining), he proposed to cancel the agreements,—a suggestion readily complied with by the firm ; and now, determining to pursue legitimate sculpture only, he secured a study at No. 8, Percy Street, Bedford Square, where, and at No. 10 in the same street, most of his finest works were produced.

In 1824, Mr. Baily received his first commission for a public work, the statue of Earl St. Vincent, erected in St. Paul's Cathedral at the expense of the Government, and shortly after he was

appointed to execute portions of the external and internal sculptural decoration for Buckingham Palace, consisting of the centre pediment of the now enclosed front, the wind dial, a basso-relievo, illustrative of English History, and statues of poetry, painting, and sculpture, as well as half, or one side, of the Marble Arch which now faces Hyde Park. Mr. Baily had now obtained immense popularity; his 'Eve at the Fountain' at once established his reputation as a poetic sculptor, and his works then in progress became the art-conversation of the day.

A subscription statue of Telford, the engineer, erected in St. Paul's, followed the recently-erected monument to St. Vincent, and received no less commendation than his Sir Richard Bourke, executed in bronze at the expense of the people of Sidney, and there erected. These statues established the fame of Mr. Baily as a portrait-sculptor, and shortly after followed commissions for the execution of his colossal statue of Earl Grey at Newcastle, and Sir Astley Cooper in St. Paul's.

Although Mr. Baily had been extensively occupied with commissions of this class, his poetic mind was busily at work, and at the same time he produced his famous Sleeping Nymph, purchased by Lord Monteagle, in whose possession it now is, as well as a posthumous recumbent statue of Mrs. M'Connell, of Manchester, which much increased his popularity in that city. Up to this period in Mr. Baily's career, the lesser branch of his art, bust portraiture, had not been neglected, and his industrious hand had already chiselled some of the most famous men of the day.

In 1834 the great competition in connection with the erection of a monument to Nelson opened a wide field for the exhibition of his poetic mind, and although his design was superseded by the column which now exists, it was pronounced a work "worthy of any age and of any nation." The statue which surmounts the column in Trafalgar Square is from Mr. Baily's chisel; the original model is in the Hall of the Admiralty.

The late Joseph Neild, Esq., a great patron of art, and admirer of Mr. Baily's genius, largely employed him. In his gallery at Grittleton House, Wiltshire, are deposited Mr. Baily's marbles of 'Eve listening to the Voice,' 'The Tired Huntsman,' 'Nymph preparing to Bathe,' 'The Graces,' 'Adam consoling Eve after the Fall,' and 'Maternal Affection;' of his plaster works, statues of Flaxman and Stothard, and an *alto-relievo* of a 'Mother and

Child :’ they are now the property of Sir John Neild. The late Mr. Bicknell was another admirer of Mr. Baily’s talent, and among his collection, until recently, were four statues by this artist—‘Paris and Helen,’ and ‘Cupid and Psyche.’ Of Mr. Baily’s works of a monumental character, the most conspicuous are those to the memory of Lord Holland in Westminster Abbey, and Lord Egremont at Petworth ; but numerous specimens of his genius in monumental design are distributed throughout the country, especially in his native city, among which may be mentioned a statue of Piety, to the memory of Mrs. Middleton, erected in the Cathedral, and another in the same edifice, to record the death of Philip Miles, Esq. His statue of Dr. Wood, of Cambridge, was placed in St. John’s College in 1839. It is, probably, Mr. Baily’s finest production in portraiture, and so highly were its merits appreciated at Cambridge that a sum of money was raised, and on the work being completed, Mr. Baily was presented with a costly silver inkstand and the thanks of the College.

From this date, 1839, until 1858, Mr. Baily was largely employed upon works of a public character, amongst which were statues of the Duke of Sussex for the Freemasons’ Hall, in marble ; Judge Tindall, in bronze, erected at Chelmsford ; Dean Dawson, for Dublin ; Sir Charles Metcalf, for India ; Sir Pultney Malcombe, for St. Paul’s ; Dr. Flemming, erected in the Manchester Cathedral ; Stephenson, for the London terminus of the North-Western Railway ; a colossal statue of Sir Robert Peel, for Bury, Lancashire ; Judge Mansfield and Fox, for the vestibule of the Houses of Parliament ; the Morning Star and Milton’s Genius for the Mansion House. Upon Mr. Baily retiring from the active pursuit of his profession, many of his original models found a home in the Crystal Palace, and many others were purchased by private individuals. The last work upon which Mr. Baily was engaged was a female statue, ‘Resignation,’ exhibited in 1858.



JAMES ORCHARD HALLIWELL, F.R.S.

THE forthcoming tercentenary commemoration of the birth of Shakespeare will draw passing attention to the career of many who have contributed by their labours to the elucidation of the Poet's works. The name of James Orchard Halliwell has long been identified with the history of Shakesperian criticism, and his researches, as we shall presently show, have assumed a character of almost national importance. One of the secrets of Mr. Halliwell's literary success has been his unflagging industry and devotion to one subject. "In matters requiring deep research," once wrote Mr. Halliwell in the cause of literature, "it is impossible for any one, however industrious, to do justice at one and the same time to a great variety of subjects; and I should strongly advise young men who may be intending to devote themselves to the literature of research, to ponder well on the selection of a subject for study, but, having made that selection, to exclude other topics, however seductive their consideration may appear."

James Orchard Halliwell was born in Sloane Street, Chelsea, in 1820. Having imbibed a taste for antiquarian research, he commenced to study literature chiefly from that point of view, and at the age of nineteen produced his first publication, 'A Chronicle of the First Thirteen Years of the Reign of Edward IV., by John Warkworth, edited from the original MS., with Introduction and Notes.' In the same year (1839) he was elected a Fellow of the Royal Society. In 1840 appeared 'The Chronicle of William de Rishanger, and the Miracles of Simon de Montford, edited from the Cottonian MSS., with Introduction and Notes,' and in 1841 by his 'Ludus Coventriæ, a Collection of Mysteries formerly represented at Coventry, from the Cotton MS., with Introduction and Notes.'

Mr. Halliwell's first contribution to Shakesperian literature appeared in 1841, with the title 'An Introduction to Shakespere's *Midsummer Night's Dream*,' followed in the same year by another, entitled, 'On the Character of Sir John Falstaff as originally exhibited by Shakespere in the Two Parts of *Henry IV.*;' and the nature of Mr. Halliwell's studies during the two-and-twenty years that have elapsed since, may be gathered from a list in chronological order of the principal works which he has produced up to the present time.

'The Nursery Rhymes of England, collected principally from Oral Traditions.' (Frequently reprinted.)

'The Private Diary of Dr. John Dee, and a Catalogue of his Library, from the original MSS., with Introduction and Notes.'

'The First Sketch of Shakespere's *Merry Wives of Windsor*, with an Introduction and Notes.'

'The First Sketches of the Second and Third Parts of *Henry VI.*, with Introduction and Notes.'

'*Tarlton's Jests and News out of Purgatory*, with Notes, and some Account of the Life of *Tarlton*.' 8vo.

'The *Thornton Romances*, edited from MSS. at Lincoln and Cambridge, with Introduction and Notes.' 4to.

'Illustrations of the Fairy Mythology of a *Midsummer Night's Dream*.' 8vo.

'Shakespere's Play of *Henry IV.*, from a contemporary MS., with Introduction and Notes.' 8vo.

'A Dictionary of Archaic and Provincial Words, Obsolete Phrases, Proverbs, and Ancient Customs.' 2 vols. 8vo.

'A Life of Shakespere.' 8vo.

'Popular Rhymes and Nursery Tales.' 8vo.

'*Marston's Works*, with Notes and Life.' 3 vols. 8vo.

'An Introduction to the Evidences of Christianity.' 8vo.

'Notes of Family Excursions in North Wales.' 4to.

'*Rambles in Western Cornwall by the Footsteps of the Giants*.' 4to.

'The Works of William Shakespere; the Text formed from a New Collation of the early editions: to which are added all the Original Novels and Tales on which the Plays are founded, copious Archæological Annotations on each Play, an Essay on the Formation of the Text, and a Life of the Poet.' Folio. To be completed in fifteen volumes, eleven of which have been issued.

‘A Descriptive Calendar of the Ancient Manuscripts and Records in the possession of the Corporation of Stratford-upon-Avon.’ Folio.

It will be seen that the *magnum opus* of Mr. Halliwell is his large folio edition of Shakespere’s works, of which eleven are published, and four more are in preparation. This magnificent production is quite a marvel in literature, but it does not surpass in grandeur of conception the plan which Mr. Halliwell has formed for the preservation of the Poet’s historical remains.

In the spring of 1861, the site of New Place, the last residence of Shakespere, and the small garden attached to it, were put up for sale. No public interest was excited at the time, and the estate was bought in; but, on the occasion of its being put up for re-sale in the following autumn, Mr. Halliwell ventured to appeal to the press, with the view of securing it for the public, and the idea was so kindly and vigorously supported by the leading papers, the object proposed was attained readily and successfully.

The old proverb says that it never rains but it pours. New Place, which had for some months gone begging, now became a public favourite, and no fewer than three persons came forward to rescue the property from the hands of speculative builders. The liberality of the public, however, rendered it unnecessary to have recourse to the purse of any one individual for the accomplishment of the object in view.

Through the ardent personal exertions of Mr. Halliwell, the success of this movement led in October, 1861, to the establishment of the Shakespere Fund, for the promotion of the following objects:—1. The purchase of the gardens of Shakespere at New Place. 2. The purchase of the remainder of the birthplace estate. 3. The purchase of Anne Hathaway’s cottage, with an endowment for a custodian. 4. The purchase of Getley’s copyhold, Stratford-on-Avon. 5. The purchase of any other properties at or near Stratford-on-Avon, that either formerly belonged to Shakespere, or are intimately connected with the memories of his life. The calendaring and preservation of those records at Stratford-on-Avon which illustrate the Poet’s life, or the social life and history of Stratford-on-Avon in his time; and, 7. The erection and endowment of a Shakespere Library and Museum at Stratford-on-Avon.

About four thousand pounds have already been subscribed, but much more is of course required to effect these objects. The

Shakespeare Fund is at present in abeyance, that its working may not interfere with the collection of public subscriptions in aid of the approaching tercentenary celebration; but after the latter has passed and gone, the claims of the Fund will, it is hoped, receive that public attention which is now temporarily interrupted.

Mr. Halliwell, who is a member of several foreign literary and scientific societies, has long been an enthusiastic collector of old and rare books, and curious typographical fragments. In 1851 he presented to the Chetham Library, of Manchester, a valuable collection of proclamations, ballads, poems, bills, and other broadsheet literature, comprising upwards of 3000 pieces of more or less historical importance, all industriously indexed.



THOMAS HENRY HUXLEY, F.R.S., PH.D. (Breslau),

PROFESSOR OF NATURAL HISTORY, ROYAL SCHOOL OF MINES, AND
HUNTERIAN PROFESSOR OF COMPARATIVE ANATOMY AND
PHYSIOLOGY TO THE ROYAL COLLEGE OF SURGEONS.

THOMAS HENRY HUXLEY was born on the 4th of May, 1825, at the village of Ealing, near London, and received part of his education at Ealing School, in which his father was a master. For the rest, apart from a large appetite for miscellaneous reading, he is indebted to the works of Mr. Carlyle and of Mr. Mill; to the diligent study of German scientific literature; and to the training and example of a distinguished English anatomist and physiologist, Mr. Wharton Jones.

Prevented by circumstances from devoting himself to the profession of his choice,—that of an engineer,—Mr. Huxley, while still a mere boy, commenced the study of medicine under the tutelage of a physician, his brother-in-law; but a too prolonged and inquisitive devotion to his first anatomical inquiry wellnigh put an end to his career at once, by inducing a painful and lingering disease, under which his unformed constitution nearly sank. Between 1842 and 1845 Mr. Huxley went through his curriculum as a student of medicine, attending one or two courses of lectures at Sydenham College, but owing the rest of his instruction to the Charing Cross Hospital Medical School. Attracted by the admirable teaching of the Lecturer on Physiology at the latter institution, Mr. Wharton Jones, he devoted himself, with much zeal, to the study of Physiology and Histology; and, in 1845, published his first paper, containing an account of the discovery of a new structure in the sheath of the human hair. Mr. Huxley completed his medical studies, and passed the first examination for the

degree of M.B. at the University of London, taking honours in physiology, in 1845; but, as the College of Surgeons requires its members to be at least twenty-one years of age, he was still too young to become a qualified practitioner in the early part of 1846. Lamenting his enforced inaction to a fellow-student, Dr. Fayrer, now Professor of Surgery at the Calcutta Medical College, the latter suggested an application to the late Sir William Burnett for an appointment in the Navy. A letter, concocted between the two friends, was at once written and dispatched, and after passing the requisite examinations, Mr. Huxley found himself, in March, 1846, borne on the books of H.M.S. *Victory*, for service at Haslar Hospital.

Sir John Richardson, the celebrated naturalist and Arctic voyager, was at that time Medical Inspector at Haslar, and the newly-appointed assistant-surgeon had the good fortune to fall under his orders. Sir John, as was his wont, not saying much, but noting most things, and always taking a kindly interest in his subordinates, endeavoured to obtain a permanent appointment to the Museum of the Hospital for the new-comer; but failing in that, introduced him to the late Captain Owen Stanley, who, on commissioning H.M.S. *Rattlesnake* for a surveying and exploring cruise to the South Seas, applied to Sir John Richardson to find for him an assistant-surgeon who might be able to make use of the scientific opportunities the voyage would afford. Mr. Huxley gladly accepted the appointment, and left England in the winter of 1846. The principal object of the cruise was to survey the so-called "inner passage" between the great Barrier Reef and the East Coast of Australia; but, that end achieved, Captain Stanley was left at liberty to explore the adjacent coasts of New Guinea and the Louisiade Archipelago, as much as he might think proper. The 'Rattlesnake' visited Madeira, Rio, the Cape of Good Hope, Mauritius, and Tasmania, on her way to Sydney. Making that place her head-quarters for about three months in each year, the 'Rattlesnake' spent most of the rest of three successive years among the reefs and islands off the Eastern and Northern Coasts of Australia, her crew seeing no civilized faces but their own, and receiving letters but once during the intervening eight or nine months. Although officers and men had a great deal of boat-service, and lived, what most shore-going folk would be inclined to think a hard life, the casualties were remarkably few until 1850, when Cap-

tain Stanley, whose health had been broken down by the cruise of the preceding season in New Guinea, died suddenly; and afterwards a strange epidemic, originated by a scratch of the hand of one of the quartermasters by a beef-bone, spread through the ship and cost some lives. The death of the captain put an end to the cruise; and the 'Rattlesnake' returned, by way of New Zealand, the Falkland and the Western Islands; reaching England, after just four years' absence, in the winter of 1850.

Whatever may have been the value, in other respects, of the voyage of the 'Rattlesnake' (an excellent account of which has been published by the naturalist of the ship, Mr. Macgillivray), it was assuredly of immense importance to her assistant-surgeon as a training school, not only in science, but in practical life. To learn what the essentials of human existence are, and that it is quite possible to make oneself perfectly happy in an open boat, with a vertical sun frying the piece of salt pork which is one's dinner, and warming the glass of grog which is to wash it down; to ascertain experimentally, that habits of strict subordination, though unpleasant at first, are very useful and necessary under certain circumstances; to find out, in the same way, that a man's real status always depends upon his faculties and his character,—it was well worth while to spend four years amidst the infinite disagreeables of ship-life, and the racket of a midshipman's berth, to which the assistant-surgeons of that day were condemned. And, on the other hand, regarded from a scientific point of view, the 'Rattlesnake' was a sort of floating museum, with the advantage that her collections were all outside her and alive, in any number of acres of space. Unless the weather was very bad, a towing-net, put for half-an-hour over the ship's side, would always bring up material which a persevering observer, lashing his microscope and jamming his head against the window of the chart-room to keep it and himself steady, could easily turn to account. Sometimes, indeed, and this most provokingly, in those dead equatorial calms when the sea swarms with life,

“ And slimy things did crawl with legs
Upon the slimy sea,”

the huge ocean-swell would send the old ship lurching on her beam-ends, and observer and observed ignominiously to leeward; but such mishaps could be easily remedied.

It was a matter of very great moment for the uninstructed and untrained beginner in Comparative Anatomy, that the organisms thus obtained were of such a kind as to lead, by a direct and easy path, to all the highest generalizations of biological science; while many of them were so imperfectly known, that a reasonably careful and diligent inquirer could not fail to meet with novelties on all sides. In 1847 Mr. Huxley sent to the Linnean Society, of which the Bishop of Norwich, the father of Captain Stanley, was then President, a memoir on the 'Physalia,' and in 1848 another, on the structure of the allied 'Diphydæ;' following them up in 1849 by a third, on the anatomy and affinities of the 'Medusæ,' which was transmitted to the Royal Society, and in which the results of the previous inquiries were summed up and generalized. Of the fate of these essays Mr. Huxley received no tidings until his return to England, so that he had ample opportunities of forming a habit of finding the reward of labour in itself, which he has since doubtless discovered to be of great service.

It was none the less satisfactory, however, to learn, on his return in 1850, that the Royal Society had printed his last memoir; which, indeed, obtained for him, in 1852, the further encouragement (of great practical value to a young man struggling with many difficulties) of the award of a Royal Medal.

The work thus published was the expansion of only a small part of the mass of notes and drawings collected during four years and as the heads of the Admiralty had prefixed to the Manual of Scientific Inquiry, published under their sanction, a minute stating their opinion that "it would be to the honour and advantage of the Navy, and conduce to the general interests of science, if new facilities and encouragement were given to the collection of information upon scientific subjects by the officers, and more particularly by the medical officers of Her Majesty's Navy when upon foreign service," Mr. Huxley's friends and advisers (among whom the genial and warm-hearted Edward Forbes occupied a chief place) not unreasonably imagined that the Admiralty would afford such encouragement by contributing towards the publication of his researches. The history of the negotiations which took place; how the Government Grant Committee very properly declined to expend the funds at their disposal upon work which the Admiralty stood pledged to aid; how, on the other hand, the Admiralty, steadily ignoring its minute, yet gave the troublesome

assistant-surgeon full pay for three years to do that which they refused him the means of doing, may be found by those who are interested in such matters, in the preface to the 'Oceanic Hydrozoa, a description of the Calycophoridae and Physophoridae observed during the Voyage of H.M.S. Rattlesnake,' which did not make its appearance till 1859. For, though, on Mr. Huxley's ceasing to be a naval officer in 1854, the Government Grant Committee at once voted him £300 for the publication of his work, he had in the meantime necessarily drifted into other occupations which interfered with its completion.

In 1851 he submitted to the Royal Society memoirs on *Salpa* and *Pyrosoma*, and on *Appendicularia* and *Doliolum*; and in this and the following year published other papers of minor importance. In 1852 he delivered his maiden lecture on 'Animal Individuality,' as a Friday evening discourse, at the Royal Institution in Albemarle Street; and undertook, in conjunction with Mr. Busk, the translation of 'Kölliker's Human Histology' for the Sydenham Society. In this year he was elected a Fellow of the Royal Society. Still working out the materials collected during his voyage, Mr. Huxley presented to the Royal Society, in 1853, a memoir on the Morphology of the Cephalous Mollusca, in which an attempt is made to reduce the structure of these animals to a common plan, and to show how the plan is modified in each subdivision of the group; and his attention being necessarily much directed to histological questions in the course of translating his share of Kölliker's work, he wrote, in this and the following year, papers on the Development of the Teeth, on the *Corpuscula Tactûs*, on the Structure of the Spleen, on the Cell Theory, and an article for Todd's *Cyclopædia*, on the 'Tegumentary Organs,' besides sundry contributions to Comparative Anatomy.

In 1855 Mr. Huxley was appointed to the Chair of Natural History (including Comparative Anatomy and Palæontology) at the Royal School of Mines in Jermyn Street, vacated by the translation of Professor Edward Forbes to Edinburgh. In the course of the year he delivered a lecture at the Royal Institution on the Hypothesis of Progressive Development in Time, in which he denied that the known facts of Palæontology afford any direct support to that hypothesis, and furthermore impugned the common assumption that reasoning from final causes is an important part of the methods of interpretation of the palæontologist. Ap-

pointed Fullerian Professor of Physiology to the Royal Institution in 1855, he delivered courses of lectures in 1856-7-8 in that capacity. In the same year he became Examiner in Physiology and Comparative Anatomy to the University of London, a post which he held up to 1862.

In 1857 he commenced the publication of his lectures at the Royal School of Mines in the 'Medical Times'; and, accidentally associated with his friend Professor Tyndall, dabbled a little in the Glacier question; and in this and the following year he published sundry contributions to Comparative Anatomy and Palæontology. One of the most important of these is that on the Agamic Reproduction and Morphology of *Aphis*, in which an exact analysis of the strange phenomena observed by Bonnet in the Aphides is given, and an attempt is made to demonstrate the typical construction of the head and body of articulate animals. Appointed Croonian Lecturer to the Royal Society for 1858, Mr. Huxley took for his subject the Theory of the Vertebrate Skull, and endeavoured to demonstrate that the skull is not a modified series of vertebræ, but that it is constructed on a plan of its own; he attempted further to prove the identity of certain bones in all vertebrate skulls; and he called attention to the supreme importance of the study of development in relation to this question. In the same year Mr. Huxley contributed to the Geological Society's Journal papers on *Cephalaspis* and *Pteraspis* demonstrating the piscine nature of the latter fossil, which had been called in question; on a new species of *Plesiosaurus*; an essay on the Structure and Affinities of *Pterygotus* to the Memoirs of the Geological Survey; a paper on the Anatomy of *Nautilia* to the Linnean Society; and a Report on the Deep Sea Soundings, collected by Captain Dayman, R.N., during the survey preliminary to the laying down of the Atlantic telegraph, which was conducted by that officer, to the Admiralty. He also published a paper in the Quarterly Journal of the Microscopical Society, in which it is demonstrated that the so-called homocercal fishes of the present day are in reality extremely heterocercal.

In the winter of 1858, the remarkable remains, some of which had previously been considered to be Ichthyolites, which had been discovered near Elgin in sandstones, supposed to be of Devonian age, were placed by Sir R. I. Murchison in Mr. Huxley's hands for identification and description. In 1859 the results of this inquiry,

demonstrating the remains to be reptilian, and to belong partly to Teleosauria, allied to the Reptilia of Trias, and partly to Lacertilia, allied to the Rhynchosaurus of the Trias, were communicated to the Geological Society, with the effect of reopening the question as to the age of the beds,—a question which has not yet received its final settlement. If the Elgin sandstones should turn out to be Devonian, these will be the oldest reptilian remains at present known. This inquiry necessitated a revision of the characters of the existing Crocodilia (published in the Quarterly Journal of the Linnean Society), and led to a good deal of other palæontological work.

In 1859, the 'Oceanic Hydrozoa' at length appeared; and, in the winter of the same year, a preliminary essay, on the development of Pyrosoma, the elaboration of which into a long memoir, published in the Linnean Transactions, occupied much of the year 1860. The importance of the paper lies in its professing to describe a new and unique method of animal development. In this year Mr. Huxley became one of the Secretaries of the Geological Society, an office which he held until 1862, when the increasing pressure of his occupations obliged him to withdraw from that position.

On the appearance of Mr. Darwin's great work on the Origin of Species, in 1859, Mr. Huxley, though no admirer of the doctrine of progressive development as it had been put forward by Lamarck and the author of the 'Vestiges,' perceived, like many other naturalists, that that hypothesis had, in Mr. Darwin's hands, taken an altogether new position; had, in fact, for the first time, obtained scientific standing-ground. While carefully guarding himself, therefore, against being supposed to see no difficulties in the way of Mr. Darwin's views, Mr. Huxley thought it his duty to exert himself on all occasions to obtain a fair hearing for them, and to show that, though Mr. Darwin's argument may not be complete, yet the case of his adversaries, so far as it is based upon anatomical arguments, is much weaker. Hence a good deal of controversy, sometimes about matters on which difference of opinion may fairly exist—sometimes upon questions regarding which the ascertainment of the truth is a matter of ocular inspection. The upshot of all these discussions is to be found in the 'Evidence as to Man's Place in Nature,' published in 1863, a work which has received the ordinary honours of popularity, viz. translation in Germany, and piracy in America.

Mr. Huxley published several papers on palæontological and anatomical subjects in 1860 and 1861, the most important of which is the Preliminary Essay to Decade X. of the publications of the Geological Survey, containing a new arrangement and diagnosis of the suborders of fossil Ganoid fishes.

In 1862, in the absence of the President, Mr. Huxley was called upon to deliver the annual address to the Geological Society, in which he took occasion to expand and enforce the views he had put forward in 1855. In the same year, he described several new genera of Carboniferous Labyrinthodonts, which had recently been obtained from the Scotch coal-fields; and became a member of a Royal Commission, appointed to inquire into the operation of the Acts relating to Trawling on the West Coast of Scotland. Appointed President of Section D at the meeting of the British Association at Cambridge, he in that capacity delivered an address upon the present condition and prospects of Biological Science; in the course of which he ventured to suggest that no encouragement to the study of the physical sciences at the Universities would be likely to have any practical effect, so long as the proportion of the Fellowships to be obtained by proficiency in such sciences remained as small as at present.

In the winter of this year Mr. Huxley became a member of the Royal College of Surgeons of England, and shortly afterwards received the appointment, which he holds at present, of Professor of Comparative Anatomy and Physiology to that body. He delivered six lectures to the working men in Jermyn Street, explanatory of Mr. Darwin's work upon the 'Origin of Species,' which were subsequently published from the notes of a shorthand writer; and he presented a preliminary description of a new specimen of *Glyptodon*, in the Museum of the College of Surgeons, to the Royal Society. In the course of the spring he delivered his first course, as a Professor of the College, on the 'Classification of the Animal Kingdom, and on the Structure of the Vertebrate Skull,' and has since published these lectures in the 'Medical Times.'



JAMES FERGUSSON, F.R.S.

JAMES FERGUSSON, born at Ayr in 1808, was the second son of the late Dr. William Fergusson, Inspector-General of Military Hospitals. He received the early part of his classical education at the High School of Edinburgh, but afterwards, on his father leaving that place and coming to reside at Windsor, he was transferred to a private school in England. When the time came for the choice of a profession, an opportunity offered itself which left little room for hesitation. His grand-uncle was John Fergusson, of Doonholm, who is accidentally known to fame as the friend and patron of William Burns, the father of the Ayrshire poet. He, in conjunction with Mr. Fairlie, had founded one of the large agency-houses of Calcutta, and his nephew, of the same name, had succeeded him in the house, and like him realized a large fortune in it. He again was succeeded by Mr. Fergusson's elder brother, who was consequently in a position to lend a helping hand to any younger members of the family whom fancy or interest might lead to the East.

Probably, in consequence of this family connection with India, young Fergusson's attention was early turned to the study of India and its antiquities, and he eagerly embraced an opportunity of visiting a country so full of grandeur and poetry as India really is, even without the adjuncts of youthful imaginings, and willingly adopted a profession which promised to lead to independence by an easier road than any other which was then open to him. This being arranged, he was sent to Holland for two years, nominally to learn business, but he employed the time more usefully in improving his drawing, and in the acquisition of modern languages.

After a short apprenticeship in a counting-house in London,

Mr. Fergusson sailed, in February, 1829, for Calcutta. On arriving there he found two courses open to him,—one a seat at the desk in Calcutta, with a good salary and “great expectations,” the other that of an Indigo planter’s assistant, with sixty pounds per annum and plenty of hard, but out-of-door work. This last, however, was coupled with great independence of position, and plenty of leisure for study. It also had the immense advantage of affording opportunities of learning more of native habits and customs in a few months, than could be acquired in Calcutta in as many years. With these advantages for forwarding what really was the secret ambition which rendered India and everything connected with it so attractive to him, he was not long in choosing, and the first four years of his sojourn in India were spent most happily at an Indigo planter’s in Jessore. It is true that district did not afford much scope for archæology; but Dacca and Rajnugger were within reach of a boat journey in the rains. Neither of these places are, it must be confessed, of the highest class. But there is a grandeur of conception, combined with a delicacy of detail, in all the buildings of a certain age in India which has never been surpassed, and when these are combined with the gorgeousness of a tropical vegetation and all the picturesque adjuncts of Eastern life, they produce an effect that far surpasses anything in the cold grey West.

Circumstances connected with the commercial crisis of 1833 induced Mr. Fergusson to leave Jessore for a time to settle in Calcutta, and during the summer of the following year an opportunity offered itself of visiting the upper provinces. Leaving Calcutta on the 2nd of July, he performed a dawk journey to Benares in the height of the rains,—a thing pronounced impossible before starting,—and reached Mussoorie, in the Himalayas, visiting all the great cities on his route. On returning to Delhi, he found that his friend Blake had organized a journey for him to Jeypore (where Blake himself was afterwards murdered). This enabled him to see some of the most important cities in Rajapootana; and then returning from Allahabad by water, he had, during four months’ absence, seen a great deal, and acquired a firm basis of knowledge in the favourite study of his life.

The following year an excursion to the celebrated festival of Juggernath, at Puri, enabled him to visit the Orissa Temples, which are the most extensive group of Hindoo Temples in the

Bengal Presidency, and also thoroughly to explore the group of Cave Temples at Udyagiri, the oldest, and probably, for an antiquary, the most interesting of those in India.

Having now acquired a tolerably correct idea of the practice of Indian art, a voyage to China in the following year afforded a most important addition to the theory. It may be that there is not much to admire in the architecture of the Chinese, but the art with them is still a living art. They neither look to the East nor to the West for precedents, and have no great respect for the authority of antiquity in these matters. They build what they think will be most convenient and suitable for their purpose, and ornament it according to the newest dictates of taste.

Money matters having, by an unusual coincidence, prospered more rapidly than architectural studies, in 1838 Mr. Fergusson found himself in a position to retire from business, and to carry out his long-cherished intention of a thorough exploration of the antiquities of India. For this purpose he left Calcutta in September of that year, and proceeded up the valley of the Ganges, revisiting many of the places he had seen before, and many others which were new to him, but this time extending his journey to Loodianah, on the Sutlege, in the hopes of being able to penetrate to the Punjaub, possibly to Cashmere. The political circumstances of the time rendered this impracticable; and in consequence, turning his face southward, he wandered down through Rajapootana, reaching Bombay just eight months after leaving Calcutta. As he had been incessantly in motion during this period, always travelling alone with the lightest possible camp equipage, and with one well-defined object before him, he was enabled to visit almost every site in Central India which presented any object of archaeological interest; and as everything worth drawing was drawn on the spot, and a description written with the object before him, Mr. Fergusson was enabled to add very considerably to the knowledge he had before acquired. The most important result of this journey was a more thorough and systematic exploration of the Rock-cut Temples of Western India than had before been attempted,—Adjunta, Ellora, Karli, Salsette and Elephanta being visited in succession, and plans and drawings made of all their more important peculiarities. With the knowledge of the subject previously acquired, aided by the decipherment of Indian inscriptions by Mr. Prinsep and others, it was not difficult for Mr. Fer-

gusson to arrange all the examples in a chronometric series relatively to one another, nor to feel certain that the whole were comprised within the twelve centuries that elapsed between 200 B.C. and 1000 A.D.

On his way home, Mr. Fergusson landed at Cossier, and passing the desert, thence visited Thebes, and all the important places on the Lower Nile; and after a short tour in Greece and Italy, he reached England in the autumn of 1839. Notwithstanding the extent of these journeys, Mr. Fergusson still felt that there was a portion of India which he must see before he could speak with anything like confidence on the subject of Indian architecture. The Madras Presidency is inhabited by races differing in every essential from those occupying the plains of Bengal. Their architecture, he knew, must consequently be different; but the exact ratio in which the races and their art differed, could only be known by inspection; he hailed therefore with pleasure the opportunity which presented itself in 1841 of revisiting India for a short period. This time he landed at Bombay, and proceeding down the coast in an open boat, landed at Goa, Cannanore, and Calicut, and proceeded thence across the country to Madras, visiting all the temples and cities which lay in his route, or within an accessible distance on either hand.

The first result of these studies was embodied in a paper read by Mr. Fergusson to the Asiatic Society, December, 1842, 'On the Rock-cut Temples of India.' This he afterwards republished in a separate form, accompanied by a folio volume of plates, from his own sketches, illustrating the principal types of Cave Architecture. This was followed in 1847 by a more ambitious work, entitled 'Picturesque Illustrations of Ancient Architecture in Hindostan,' and he intended that it should have been followed by a third on the Mahometan styles. The expense of these works, however, is so great, and the sale so limited, that no publisher would undertake the continuation, and the proposed work still remains unpublished.

In the same year with the work last mentioned, Mr. Fergusson published a volume on the 'Ancient Topography of Jerusalem,' written evidently with the most intense belief in the truth of the views he propounds, and the most undoubting faith in his argument carrying conviction to the minds of every one else. The views of the topography which were put forth in this work were,

however, of so novel and of so startling a nature, that the public refused sternly to accept them at the hands of an untried and unknown author, and the book remained a dead letter till recently, when, in consequence of some articles written by him in Smith's 'Dictionary of the Bible,' and a lecture delivered at the Royal Institution, public interest has been recalled to it.

Mr. Fergusson's next literary attempt was not more successful than the last. The result of his Eastern explorations, as well as his subsequent studies of the principal buildings, both ancient and modern, during several extensive journeys since his return to Europe, had led him to certain very definite conclusions as to the theory of architecture, and architectural design in general; these he proposed to embody in a treatise entitled, 'An Historical Inquiry into the True Principles of Beauty in Art,' the first volume of which was published by Longmans in 1849. This was evidently intended by its author should have been his *magnum opus*, and to embody the result of all his thoughts on the subject of architecture, and of his investigations in the different countries he had visited. The public were not, however, prepared to receive dogmatic instruction on such a subject from one they did not know, and who had not yet earned his title to speak with authority on such subjects; the work accordingly had no sale, and was abandoned after the appearance of the first volume.

In 1851 Mr. Fergusson published a work entitled, 'The Palaces of Nineveh and Persepolis Restored,' which was more successful, being undertaken at a time when the discoveries of Botta and Layard were exciting considerable attention, and when any attempt to explain the construction of buildings whose form and uses were so mysterious, was sure to attract attention. In consequence of this publication, Mr. Fergusson was employed to design and superintend the erection of the Nineveh Court at the Crystal Palace; and the connection then formed led in 1855 to his appointment as General Manager of the Company.

Between the appearance of these two last-named works, Mr. Fergusson published 'An Essay on a Proposed New System of Fortification.' This was followed up by a pamphlet entitled 'The Peril of Portsmouth,' and another, called 'Portsmouth Protected,' with other essays on the same subject. These excited considerable attention at the time, and were not without influence in directing public attention to the defenceless state of the country; this led

to the appointment of a Royal Commission to inquire into the subject, of which Mr. Fergusson was a member, and in consequence of which he is still employed at the War Office, as one of a committee to advise how the recommendations of that commission could best be carried into effect.

Before joining the appointment of Manager to the Crystal Palace Company, Mr. Fergusson published his 'Illustrated Handbook of Architecture,' which is the work by which he is most generally known. This beautifully illustrated work the author always considered to be in reality a popular edition of his 'True Principles of Beauty in Art,' already alluded to,—all that was really original or scientific in the former work being cut out so as not to offend the weak digestive organs of his readers, and the whole written down more nearly to the level of the state of architectural knowledge in this country in the present day. "*Reculer pour mieux sauter*," the author held was his motto in composing this work, and to this is probably owing its popularity.

Mr. Fergusson's last work is the 'History of the Modern Styles of Architecture,' published last year, and forming practically a third volume to the 'Handbook,' though written in a much less timid style. Besides these, Mr. Fergusson is the author of numerous pamphlets and essays, contributed to the leading journals or to the Transactions of various literary and scientific societies; among these the more remarkable appear to be, 'Observations on the British Museum, National Gallery, and National Record Office,' published in 1849, and 'A Restoration of the Mausoleum of Halicarnassus,' published last year, etc.



THE REV. F. D. MAURICE, M.A.

AMONGST our living divines, few occupy a more elevated station in public esteem, whether for intellectual energy or practical effort, than the Rev. Frederick Denison Maurice. His opinions are indeed marked by some peculiarities, which, whilst they have provoked censure, have yet, on the other hand, endeared to him the regards of a large circle of friends and admirers. Mr. Maurice is entitled to a notice here because he occupies a somewhat peculiar position among English divines. He is almost equally unpopular with those who are called High Churchmen, Low Churchmen, and Broad Churchmen. He has spoken with vehemence against all these names, though he maintains that those who bear them are indispensable elements in the Church, and bear witness, each in their own way, for eternal Truths. How he has arrived at these convictions may be partly explained by his especial mental culture and experience; and so far as influences of this kind are known to have existed in his case, they may be briefly recounted here.

Mr. Maurice was the son of a Unitarian minister of great worth and nobleness of character, and was born in 1805. At the usual age he was sent to Trinity College, Cambridge, where Julius Charles Hare, the late distinguished Archdeacon of Lewes, was then tutor. Here it was that he formed the acquaintance of many since distinguished men; among the rest, of John Sterling, of whose life the two memoirs, that of Archdeacon Hare, followed by the 'Life' by Carlyle, will be in every reader's recollection. From Trinity College, Sterling and Maurice both migrated to Trinity Hall; the former appears to have left Cambridge without having gone up for examination, and Maurice, whose name is found in the First Class in Civil Law for the year

1826-7, being a Dissenter, was unable to take a degree. Possibly Civil Law was the only faculty open to an undergraduate in his circumstances; whether or not, a First Class in Civil Law, from the small number of competitors, could not then, whatever it may now, indicate any great amount of academical success. After college the two friends met in London; and during the latter part of 1828, and throughout 1829, Maurice became editor of the 'Athenæum,' then lately started by Mr. Silk Buckingham. To this adventure Sterling contributed a series of sketches of contemporary writers, some stirring tales, and a number of reviews, indicating the vivacity and variety of his gifts. But the element of commercial success was wanting; and at the end of the period mentioned it was handed over to Mr. Dilke, father of the present Sir C. Wentworth Dilke, under whose arrangements the paper has been gradually raised to its present flourishing condition. At this period the doctrines of Coleridge were, as Mr. Carlyle's readers will remember, the favourite study of the youthful spirits of the time, and amongst those who listened and pondered over what fell from the sage, few, we imagine, were more lastingly impressed or deeply imbued than Maurice. No one can fail to see in the mode in which religious and social questions are dealt with in Mr. Maurice's writings, a habit of thinking which must have been in a great measure derived from Coleridge. About this time appeared a novel by Mr. Maurice, 'Eustace Conway,' wild enough in plot and conception, but giving evident tokens of this philosophical influence. By degrees, the views of the writer and student, aided by the influence of Coleridge's Church theories, began to concentrate themselves in theology; and before long Mr. Maurice found that the path of practical activity in life led him inevitably to the Church of England, and finally to join its ministry. A degree being necessary to Orders, Mr. Maurice betook himself to Oxford; and in Gladstone's year, 1831, we find his name in the second class of classical honours at Exeter College, of which Society he is still a member. His ministerial duties commenced at a small curacy in Warwickshire, where he lived from 1834 to 1836. In the latter year he was elected Chaplain of Guy's Hospital, an office which he filled for ten years. This was the time during which, as we know from Carlyle, the intimacy with Sterling was closely renewed; and in 1837 Mr. Maurice married Miss Anna Barton, a younger sister of John Sterling's

wife, who died in 1845, leaving him two sons. Shortly after appeared one of the most important of Mr. Maurice's earlier works, 'The Kingdom of Christ; or, Hints on the Principles, Ordinances, and Constitution of the Catholic Church,' in letters to a Quaker. In these volumes the writer lays down an elaborate exposition of the existence, nature, and constitution of the Catholic Church, and of its relations to mankind. The work, originally published in 1838, was completely rewritten and remodelled in a second edition, which appeared in 1842.

Before this time Maurice had been asked by the Rev. Hugh James Rose to undertake the article on Moral and Metaphysical Philosophy in the 'Encyclopædia Metropolitana,'—a work commenced many years before, with a preface by S. T. Coleridge, and of which Mr. Rose was then the editor. When the 'Encyclopædia,' after its completion, fell into the hands of the late Mr. Griffin, the principal articles in it were republished separately. Maurice's swelled into four volumes, on Ancient, Early Christian, Mediæval, and Modern Philosophy. It was not finished till the year 1861. In the year 1844 occurred the lamented death of Sterling, of whom a memorial by his friend exists in the shape of a small volume, entitled 'Remarks on the Fable of the Bees,' by William Law, with an Introduction by F. D. Maurice. Carlyle relates that this publication was undertaken at the request of Sterling, who, shortly before his death, was so struck with the refutation of Mandeville by Law, that he desired his brother-in-law's assistance to reproduce it.

In 1846 Mr. Maurice was appointed to deliver the course of lectures founded by Bishop Warburton at Lincoln's Inn, and in the same year was elected Chaplain of that Society, at which post he continued down to 1860. He had been since 1840 Professor of Modern History and English Literature—in 1846 he became also Professor of Ecclesiastical History—at King's College; he was further nominated by the Bishop of London, in 1845 and 1846, to preach the series of lectures founded by Robert Boyle, to be preached in one of the London churches, "against notorious infidels,—to wit, Atheists, Theists, Pagans, Jews, and Mahometans." The fruits of his labours in these fields of duty appeared from time to time in the publication of volumes of sermons and lectures. 'Christmas Day and other Sermons,' delivered at Guy's Hospital, had been previously brought out in 1843; in 1848 we find 'The

Lord's Prayer,' a course of nine sermons preached at Lincoln's Inn; 'The Church a Family' in 1850; 'The Old Testament' in 1851; 'The Prayer-Book considered in reference to the Romish System' in 1852; and 'The Prophets and Kings of the Old Testament' in 1853.

In 1849 Mr. Maurice married the sister of Archdeacon Hare, who had previously married the sister of Mr. Maurice.

Among Mr. Maurice's addresses many had express reference to the questions and events of the day. As early as in 1839 he had contributed a volume of lectures on the education question, in which he maintained that the function of the State is to govern, and of the Church to educate, a country; and that each suffers if it interferes with the work of the other. The Warburtonian Lectures of 1846 are preceded by a treatise directed against the "Theory of Developments," by Mr. J. H. Newman. In 1852 the Boyle Lectures were published, and attracted much attention. The following sentences will be a guide to their purport and intention; Mr. Maurice says:—"I propose to examine the great religious systems which present themselves to us in the history of the world, not going into their details, but inquiring what is their main characteristic principle. If we find, as the objectors say, good in each of them, we shall desire to know what this good is, and under what conditions it may be preserved and made effectual; we may then be occupied with considering in what relation does Christianity stand to these different faiths." This may be considered to represent one of Mr. Maurice's characteristic views in matters theological. In the following year a volume of Sermons was published, three of them relating to the Sabbath Day. The author contended that the meaning of the Jewish Sabbath was to be learnt from the teaching of our Lord, who explained the Fourth Commandment in its true and natural sense, and rescued it from the perversions of the Pharisees of those days and of later days. The Jerusalem Bishopric, the right and wrong methods of supporting Protestantism, and the Oxford Controversy in Mr. Ward's time, were the subjects of occasional letters and pamphlets. On the subject of Subscription to the Articles, Mr. Maurice wrote a pamphlet, entitled, 'Subscription no Bondage,' shortly after he took Orders. He maintained in it that the Articles were intended to be guides to a course of manly study in theology, ethics, and literature, and to protect students from superstitions which would interfere with the freedom of their

inquiries. Since the doctrine of Mr. Disraeli has gone forth, that the clergy are bound by their subscription *not* to be free inquirers, Mr. Maurice has declared that on his principles it is untenable, and should be abandoned.

In 1853 appeared 'Theological Essays,' the volume which, of all others, has provoked the greatest amount of hostile criticism, and has been accompanied by the most serious consequences. In this work Mr. Maurice contended against the ordinary doctrine of the endlessness of Future Punishment, as inconsistent with the Gospel of Christ's Redemption, and as founded on an Arian abuse of the word Eternal. The publication of this work provoked a storm of opposition from more than one section of the Church; and one of its results was that the author was, in the same year, dismissed from the two professorships he had hitherto held at King's College. In the succeeding year were published 'Lectures on the Ecclesiastical History of the First and Second Centuries,' founded on notes of extempore lectures delivered at King's College, remodelled and prepared for the press by the lecturer.

At this period in Mr. Maurice's life we find stronger traces of the movement with which his name has been since connected, as the advocate of a system of social combination amongst workmen on Christian principles. This principle was explained in a series of lectures delivered at Willis's Rooms in 1854, shortly after the establishment of the "Working Men's College," now in Great Ormond Street, of which Mr. Maurice is Principal. This institution has been supported by the voluntary aid of numerous fellow-labourers from the educated classes of society, who express a strong hope that the College will bear fruits on the whole land, through the teachers and pupils who pass from its walls to other scenes of action. Mr. Maurice has been one of the foremost also in the establishment and maintenance of "The Ladies' College," in Harley Street.

In 1854 was published a work, entitled, 'The Doctrine of Sacrifice deduced from Scripture.' This series of lectures, delivered in the Chapel of Lincoln's Inn, was dedicated to the members of the Young Men's Christian Association, to whom some vehement strictures upon the 'Theological Essays' had been addressed by Dr. Candlish. In the same year appeared 'The Unity of the New Testament,' a synopsis of the Gospel narratives. Later still,

in 1857, we find the 'Gospel of St. John,' a series of lectures addressed to the congregation in Lincoln's Inn; and, in the same year, the 'Epistles of St. John,' a treatise on Christian Ethics, addressed to the students at the Working Men's College.

In 1855 we find Mr. Maurice lecturing at Edinburgh on the 'Religion of the Old Romans;' and amongst his latest productions is a series of sermons, preached at Lincoln's Inn, on the 'Indian Crisis.'

Mr. Maurice is said by the religious periodicals of all schools to be a "misty" writer. We are assured, nevertheless, that he takes some pains to address the congregation in the Chapel of St. Peter's, Vere Street, Oxford Street, to which he was appointed in 1860, in simple English, and to divest his sermons, as much as may be, of technical phraseology. And he declares, we have heard, that some of his most affectionate and earnest listeners have been found among men and women of the humblest classes, even among agricultural labourers, when he has had the opportunity of preaching the Gospel to them.



MICHAEL FARADAY, D.C.L., F.R.S.

MR. DAVIES GILBERT, who was the early friend and patron of Sir Humphry Davy, and subsequently President of the Royal Society, is said to have remarked that "the greatest discovery Davy ever made was the discovery of Michael Faraday." Certainly no circumstance reflects more honour on the name of the discoverer of the metallic bases of the alkalis and earths, than the disinterested patronage which he bestowed on the bookseller's apprentice when he was struggling to enter into the service of Science.

Michael Faraday was the son of a smith ; he was born at Newington, on the 22nd September, 1791. The limited means of his parents did not allow of their extending the education of the young Michael, beyond that afforded by a common day-school in the neighbourhood. Here he was instructed in reading, writing, and arithmetic ; and he picked up, from such books as fell in his way, so much information of a general character, as deeply interested him, and induced a fondness for reading, at the same time as it quickened those habits of careful observation which appear to have been of natural growth in this young philosopher. When thirteen years of age, Michael Faraday was apprenticed to Mr. Riebau, of Blandford Street, a bookseller and binder. The desire of the boy to be amongst books appears to have led to this arrangement ; and some scientific treatises falling into his hands, kindled in him that spirit of scientific inquiry, which has led him onward to those brilliant results, which add lustre to the history of British Science.

We are informed that thus early, in the intervals of business, which were few, he made an electrifying machine with a glass phial, and that subsequently he succeeded in constructing one with

a proper cylinder. With this instrument he made himself familiar with all the phenomena of this Force then known, and discovered the extent of the field of inquiry opening before him. Mr. Dance, who frequented Mr. Riebau's shop, was a Member of the Royal Institution, and being interested in the intelligence and industry of the apprentice, he took him to hear some of Davy's lectures. But this important event in the life of the philosopher is best described in his own words, taken from a letter to Dr. Paris, written in 1829 :—

“When I was a bookseller's apprentice I was very fond of experiment, and very averse to trade. It happened that a gentleman, a Member of the Royal Institution, took me to hear some of Sir H. Davy's last lectures in Albemarle Street. I took notes, and afterwards wrote them out more fairly in a quarto volume.

“My desire to escape from trade, which I thought vicious and selfish, and to enter into the service of Science, which I imagined made its pursuers amiable and liberal, induced me at last to take the bold and simple step of writing to Sir Humphry Davy, expressing my wishes, and a hope that, if an opportunity came in his way, he would favour my views ; at the same time I sent the notes I had taken at his lectures.

“The answer, which makes all the point of my communication, I send you in the original,* requesting you to take great care of it, and to let me have it back, for you may imagine how much I value it.

“You will observe that this took place at the end of the year 1812, and early in 1813 he requested to see me, and told me of the situation of Assistant in the Laboratory of the Royal Institution then just vacant. At the same time that he thus gratified my desires as to scientific employment, he still advised me not to give up the prospects I had before me, telling me that science was a harsh mistress, and in a pecuniary point of view but poorly rewarding those who devoted themselves to her service. He smiled at my notion of the superior moral feelings of philosophic men, and said he would leave me to the experience of a few years to set me right on that matter.

“Finally, through his good efforts I went to the Royal Institution early in March of 1813, as assistant in the laboratory ; and in October

* “To Mr. Faraday. December 24th, 1812.—Sir, I am far from displeased with the proof you have given me of your confidence, and which displays great zeal, power of memory, and attention. I am obliged to go out of town, and shall not be settled in town till the end of January ; I will then see you at any time you wish. It would gratify me to be of any service to you. I wish it may be in my power. I am, Sir, your obedient humble Servant, H. DAVY.”

of the same year went with him abroad as his assistant in experiments and in writing. I returned with him in April, 1815, resumed my station in the Royal Institution, and have, as you know, ever since remained there."

The duties of an assistant in a laboratory where Davy, Wollaston, and others were busy in original researches, or in examining the discoveries made by Continental and British chemists, at a time when science progressed rapidly, left Faraday but little time for any inquiries of his own. This was, however, the period of his apprenticeship as an experimental philosopher, and zealously did he cultivate those divisions of knowledge which have aided him in the maturity of his fame.

The progress of an experimentalist is to be marked only by his discoveries. In the quiet of the laboratory there would be but few incidents which would add colour to the portrait of the true philosopher.

In 1820 Mr. Faraday published his discovery of that interesting substance the chloride of carbon, and in that year (Ersted announced his great discovery of the relation of electricity and magnetism. In the October of the same year Faraday commenced his investigations on this subject, with which his name must be forever connected; and in a paper dated September 11, 1821, he published his discovery of "New Electro-Magnetic Motions," and added thereto "A Theory of Magnetism," in the 'Quarterly Journal of Science.' In 1823 the condensation of chlorine into a liquid was first effected by our young chemist, and an account of his experiments published in the 'Philosophical Transactions,' with a note by Davy, "On the Condensation of Muriatic Acid Gas into the liquid form." In this year the English chemist was elected Corresponding Member of the Academy of Sciences of Paris.

We have been informed that the only feeling of anything approaching to jealousy shown by Davy towards Faraday, was exhibited in connection with this discovery of the condensation of the gases, and sundry papers by Davy show how deeply he was interested in the problem which had been solved by Faraday.

Davy is said to have discouraged the idea of recommending Faraday for election into the Royal Society, and certain it is, that he was elected a Fellow on the 8th January, 1824, mainly through the instrumentality of the late Richard Phillips, the chemist, who

was, to the day of his death, regarded by Faraday as his especial friend. The desirability of producing a very perfect glass for optical purposes engaged Mr. Faraday's attention for a considerable period, and we find him appointed by the Royal Society to deliver the Bakerian Lecture in 1829—the subject of it being “On the Manufacture of Glass for Optical Purposes.” A very elaborate inquiry was also conducted by him into the composition of steel, and the effects of alloying it with other metals.

In 1831 began the series of Experimental Researches in Electricity, which have been published from time to time in the Transactions of the Royal Society; and the fourteen series which had then appeared were published in 1839 in a separate volume, which has been followed by two others, bringing those Researches down to a very recent period.

Those Researches in electricity are beyond all doubt the choicest series of examples of pure and well-regulative induction to be found in this or in any other language.

The high character of those Researches led the University of Oxford in 1832 to confer on their author the honorary degree of Doctor of Civil Law. In 1833 Mr. Fuller founded the Chair of Chemistry in the Royal Institution, and at his express desire Dr. Faraday was nominated the first Fullerman Professor. In 1835 Lord Melbourne's government recognized the importance of his scientific discoveries by making Dr. Faraday the recipient of a pension of £300 per annum.

With unwearying industry the subject of this brief memoir pursued his investigations; and in addition to the lectures regularly given by him in the Royal Institution, commencing in 1827, he, from 1829 to 1842, as regularly lectured on Chemistry to the Cadets at the Royal Military Academy, at Woolwich.

Dr. Faraday is one of the eight Foreign Associates of the Imperial Academy of Sciences at Paris; a Commander of the Legion of Honour; a Knight of the Prussian Order of Merit; and member of numerous Scientific Bodies on the Continents of Europe and America.

These honours, won by the industry and the zealous truthfulness with which his scientific investigations have been carried on, mark the appreciation of the English experimentalist by foreigners. Of him a Frenchman writes: “Mr. Faraday must be regarded as a penetrating and patient investigator, and as a profound and cir-

cumspect philosopher, who knows how to subordinate his most cherished ideas to the control of discussion and experiment. An hypothesis is to him only the stone on which he supports himself in rising toward the positive result."

No one has done so much as Dr. Faraday has done towards proving the relation of electricity to all forms of matter, and showing the action of matter in modifying the conditions which this force assumes. The names of Ørsted, Ampère, and Faraday are for ever associated with electrical science as its high-priests. To the last especially is due the discovery of the obedience of matter to the influence of magnetic and dia-magnetic powers, and hence the conclusion, that all the forms assumed by the material elements of nature are due to those subtile influences which have their origin in the source of light and heat—the sun.

Dr. Faraday's mind, peculiarly gifted and educated in a school of its own, is remarkably inductive. Step by step, and every step most cautiously taken and carefully secured, he advances towards the truth. By this power, patiently exerted, he has extended the boundaries of human knowledge, and rendered his race greatly his debtor. Beyond the memoirs which we have named, several others might have been quoted, as showing the extensive surface over which his inquiries ranged. Indeed, he has scarcely left a branch of chemical or physical science untouched; and whenever Faraday has taken up an inquiry, he has let light in upon its hidden truths.

As a lecturer on science, Dr. Faraday was without his equal. At the table in the theatre of the Royal Institution, with his beautifully devised apparatus around him, he was perfectly at home and at ease. The first words which fell from his lips conveyed to all an impression of thorough earnestness, an intense desire to know, and to impart to others his knowledge of,—the truth. You felt that you were in the presence of a guide of the highest order, with whom you might go forward without fear of being led into error. Nothing but the truth could fall from his lips. Every truth would be made as clear as it was possible for a man to make it within the limits of the hour, and with the limited resources of the lecture-table.

Dr. Faraday's language was always simple; there was no ornament, and the only poetry in which he ever indulged was the earnest expression given to some of the great truths of which he was the discoverer. He sought to reach the mind of every hearer

through more senses than one. He never *told* his listeners of an experiment, he always *showed* it them, however simple and well-known it might have been.

“If,” Dr. Faraday once said to a young lecturer, “I said to my audience, ‘this stone will fall to the ground if I open my hand,’ I should open my hand and let it fall. Take nothing for granted as known; inform the eye at the same time as you address the ear.” This was the great secret of Faraday’s success. Every one left the theatre satisfied that he had acquired knowledge, and more than this, that he had gained that knowledge without much labour.

After a long and earnest struggle with nature for the discovery of her truths, and after having placed himself in the high position of being enabled to show that nature, in answer to his inquiries, had revealed many of her secrets to him, Dr. Faraday has, to some extent, retired from active duty. The evening of the days of such a man must be a period of happiness, far beyond that which can be enjoyed by ordinary men. The consciousness that mankind has been advanced by the labours of his life might render even a well-constituted mind proud. But the spirit of our experimental philosopher has been so carefully trained, and so beautifully controlled by the influences of a pure and simple piety, that instead of pride in his powers or his works, he expresses only a prayer of thankfulness that he has been guided to good, and aided in the performance of his duty—the search after truth, for its own exceeding great reward.



GEORGE CRUIKSHANK.

It seems scarcely credible that George Cruikshank—painter of ‘The Worship of Bacchus’ lately exhibited in London, Vice-President of the National Temperance League, and Lieutenant-Colonel of the Teetotal 48th Middlesex Volunteers, or ‘Havelocks’ as they are also called—is the same George, the caricaturist of half a century ago, contemporary of Gilray and Rowlandson. But so it is; and the vigour even of his humorous sketches remains unimpaired to this day. The quaint illustrations just published with the ‘Ingoldsby Legends,’ are by the same unfaltering hand which amused the town and lashed the follies of the age, between 1809 and 1814, in the ‘Scourge’ and ‘Meteor;’ which seven years later exposed some of the fashionable vices of the close of the Georgian era, in the Adventures of Tom and Jerry in ‘Life in London;’ and which, after the lapse of twenty more years, helped Charles Dickens into notice with its admirable illustrations to ‘Sketches by Boz’ and ‘Oliver Twist.’ How many thousands of young hearts, too, has the veteran moralist delighted by his charming nursery pictures, his exquisite delineation of fairies, celestial and terrestrial, angelic and diabolic. The delicate pencil which only lately imparted to our children so marvellous a fairy-like conception of Cinderella, Jack the Giant-Killer, and Puss in Boots, is guided by the same inventive brain and kindly heart that defended Queen Caroline in Hone’s ‘Every Day Book’ and ‘Political Showman,’ and amused the town after the Peace of 1815 with the caricature of Louis XVIII. trying on Boney’s Boots.

George Cruikshank was born in London, of Scottish parents, on the 27th of September, 1792. His father, Isaac Cruikshank, was

an artist in water-colours, when water-colour drawings were, however, little more than coloured outlines, and also a caricaturist; and it was in helping his father in drawing blocks for children's books, and in the illustrations of a humorous publication called 'The Drolls,' that the subject of our memoir commenced his career. The elder Cruikshank's drawings were exposed for sale at the shop of Messrs. Whittle and Laurie, printsellers, of Fleet Street. "Jemmy Whittle," as he was called, was an oddity, and his house was a favourite resort of actors, dramatists, and wits. Here the boy George, having for a time indulged in the thought of going to sea, formed a liking for the stage. On the death of his father, and when at the age of seventeen, he sought an introduction to Mr. Raymond, the manager of Drury Lane Theatre, as assistant scene-painter, with the idea of becoming an actor, but it does not appear that he followed either profession. He began now to be fully employed in etching frontispieces for song-books, jest-books, dream-books, and other cheap publications of the time, especially children's books, and he shortly embarked in the periodical satires already mentioned, the 'Scourge' and the 'Meteor.' He had evinced a desire to follow art in the higher department, and attempted on one occasion to study at the Academy. The schools at that time were restricted in space and much crowded. On sending up to Fuseli his figure of a plaster cast, the rough-grained and eccentric Professor of Painting returned the message—"He may come, but he will have to fight for a seat." Thus discouraged, the young artist never repeated his attempt to enter the Academy as a student, although he has appeared in it in the evening of his life as an exhibitor.

To enumerate the works of George Cruikshank would be impossible. The nearest approach to a complete list is contained in an unpublished manuscript catalogue, compiled by a bibliophile of the day, and presented to the artist, with the title, 'An Attempt at a List of Works Illustrated by George Cruikshank.' From it we gather that his works are about 200 in number, and his illustrations upwards of 2300. The first of any importance appears to have been the 'Humorist,' in four volumes, with forty plates, published in 1819. In 1821 appeared 'Life in London,' with thirty-six plates, followed in 1822 by 'Life in Paris,' with forty-three. Then, not to mention small things, appeared in 1823, 'Forty Illustrations to Byron,' followed in 1824 by 'Points of Humour,' with twenty

illustrations; in 1828, 'Punch and Judy,' with thirty; in 1830, 'Three Courses and a Dessert,' with fifty-one; in 1831, 'Robinson Crusoe,' with forty; in 1831 and some following years, 'My Sketch-Book,' with two hundred; in 1835 and nineteen following years, 'The Comic Almanac,' with two hundred and thirty-eight; in 1838, 'Sketches by Boz,' with forty, and 'Oliver Twist,' with twenty-four; in 1840, 'Jack Sheppard,' with twenty-seven, and 'Tower of London,' with ninety-eight; in 1842, 'George Cruikshank's Omnibus,' with one hundred; in 1847, the 'Bottle,' in eight sheets, and in the following year a sequel to it, the 'Drunkard's Children,' also in eight sheets; in 1855, the 'Table Book,' with twelve steel-plates and one hundred and fifteen wood-engravings, etc. Latterly George Cruikshank turned his attention to oil-painting, and has contributed several pictures to the exhibitions of the Royal Academy and British Institution, among which may be mentioned his 'Disturbing a Congregation,' a richly humorous scene in church, the effect on a rural congregation of a boy having accidentally dropped his peg-top, painted for the late Prince Consort; 'A New Situation,' 'Dressing for the Day,' 'Tam-o'-Shanter,' 'Titania and Bottom the Weaver,' 'Cinderella,' 'A Runaway Knock,' and lastly his great picture, the 'Worship of Bacchus.'

Of this last-named work we cannot do better than quote a description which appeared in the 'Times' of May 15th, 1863, on the occasion of its being exhibited by the painter himself in Exeter Hall. It is from the pen of Mr. Thackeray.

"In a quiet little room in Exeter Hall a veteran lecturer is holding forth all day upon a subject which moves his heart very strongly. His text, on which he has preached before in many places, is still 'the Bottle.' He divides his sermon into many hundreds of heads, and preaches with the most prodigious emphasis and grotesque variety. He is for no half-measures. He will have no compromise with the odious god Bacchus; the wicked idol is smashed like Bel and Dagon. He will empty into the gutter all Master Bacchus's pipes, his barrels, quarter-casks, demi-johns, gallons, quarts, pints, gills, down to your very smallest liqueur-glasses of spirits or wine. He will show you how the church, the bar, the army, the universities, the genteel world, the country gentleman in his polite circle, the humble artisan in his, the rustic ploughman in the fields, the misguided washerwoman

over her suds and tubs,—how all ranks and conditions of men are deteriorated and corrupted by the use of that abominable strong liquor; he will have patience with it no longer. For upwards of half a century, he says, he has employed pencil and pen against the vice of drunkenness, and in the vain attempt to shut up drinking-shops, and to establish moderate drinking as a universal rule; but for seventeen years he has discovered that teetotalism, or the total abstaining from all intoxicating liquors, was the only real remedy for the entire abolition of intemperance. His thoughts working in this direction, one day this subject of the ‘Worship of Bacchus’ flashed across his mind, and hence the origin of a work of art measuring 13 ft. 4 in. by 7 ft. 8 in., which has occupied the author no less than a year and a half.

“This sermon has the advantage over others that you can take a chapter at a time, as it were, and return and resume the good homilist’s discourse at your leisure. What is your calling in life? In some part of this vast tableau you find it is *de te fabula*. In this compartment the soldiers are drinking and fighting; in the next the parsons are drinking ‘Healts to the Young Christian.’ Here are the publicans, filthily intoxicated with their own horrible liquors; yonder is a masquerade supper, ‘where drunken masquerade fiends drag down columbines to drunkenness and ruin.’ Near them are ‘the public singers chanting forth the praises of the God of Wine.’ ‘Is it not marvellous to think,’ says Mr. Cruikshank in a little pamphlet, containing a speech by him which is quite as original as the picture on which it comments, ‘Is it not marvellous what highly talented poetry and what harmonious musical compositions have been produced from time to time in praise of this imaginative, slippery, deceitful, dangerous myth?’

“This ‘myth’ the spectator may follow all though this most wonderful and labyrinthine picture. In the nursery the doctor is handing a pot of beer to mamma; the nurse is drinking beer; the little boy is crying for beer; and the papa is drawing a cork, so that ‘he and the doctor may have a drop.’ Here you have a group of women, victims of intemperance, ‘tearing, biting, and mutilating one another.’ Yonder are two of the police, carrying away a drunken policeman. Does not the mind reel and stagger at the idea of this cumulated horror? And what is the wine which yonder clergyman holds in his hand but the same kind of stuff which has made the mother in the christening scene above ‘so tipsy that she

has let her child fall out of her lap, while her idiotic husband points to his helpless wife, and exclaims, 'Ha, ha, she's dr-unk'?

"With what vigour, courage, good humour, honesty, cheerfulness, have this busy hand and needle plied for more than fifty years! From 1799, 'when about eight or nine years of age,' until yesterday, the artist has never taken rest. When you would think he might desire quiet, behold he starts up lively as ever, and arms himself to do battle with the demon drunkenness. With voice and paint-brush, with steel-plate and wood-block, he assails 'that deceitful, slippery, dangerous myth!' To wage war against some wrong has been his chief calling; and, in lighter moments, to waken laughter, wonder, or sympathy. To elderly lovers of fun, who can remember this century in its teens and its twenties, the benefactions of this great humourist are as pleasant and well remembered as papa's or uncle's 'tips' when they came to see the boys at school. The sovereign then administered bought delights not to be purchased by sovereigns of later coinage, tarts of incomparable sweetness which are never to be equalled in these times, sausages whose flavour is still fragrant in the memory, books containing beautiful prints (sometimes ravishingly coloured) signed with the magic initials of the incomparable 'G. Ck.'"

George Cruikshank has had no more kindly and generous an admirer of his works and sentiments than the writer of the foregoing article. Twenty years ago Mr. Thackeray concluded an elaborate paper on the subject of our memoir in the 'Westminster Review' in the following words:—"Look at one of Mr. Cruikshank's works, and we pronounce him an excellent humourist. Look at all, his reputation is increased by a kind of geometrical progression, as a whole diamond is a hundred times more valuable than the hundred splinters into which it might be broken would be. A fine, rough, English diamond is this about which we have been writing." And again, ten years later, in the 'Quarterly Review' for December, 1854, in an article on 'Pictures of Life and Character,' Mr. Thackeray thus sums up his analysis of Cruikshank's works:—"Among the veterans, the old pictorial satirists, we have mentioned the famous name of one humorous designer who is still alive and at work. Did we not see, by his own hand, his own portrait of his own famous face, and whiskers, in the 'Illustrated London News' the other day? There was a print in that paper of an assemblage of Teatotallers in Sadler's

Wells Theatre, and we straightway recognized the old Roman hand—the old Roman's of the time of Plancus—George Cruikshank's. There were the old bonnets and droll faces and shoes, and short trousers, and figures of 1820 sure enough. And there was George (who has taken to the water-doctrine, as all the world knows) handing some teatotalleresses over a plank to the table where the pledge was being administered. How often has George drawn that picture of Cruikshank! Where haven't we seen it? How fine it was, facing the effigy of Mr. Ainsworth in 'Ainsworth's Magazine' when George illustrated that periodical! How grand and severe he stands in that design in G. C.'s 'Omnibus,' where he represents himself tonged like St. Dunstan, and tweaking a wretch of a publisher by the nose! The collectors of George's etchings—O the charming etchings! O the dear old German popular tales!—the capital 'Points of Humour'—the delightful Phrenology and scrap-books, of the good time, *our* time—Plancus's in fact!—the collectors of the Georgian etchings, we say, have at least a hundred pictures of the artist. Why, we remember him in his favourite Hessian boots in 'Tom and Jerry' itself; and in woodcuts as far back as the Queen's trial. He has rather deserted satire and comedy of late years, having turned his attention to the serious, and warlike, and sublime. Having confessed our age and prejudices, we prefer the comic and fanciful to the historic, romantic, and at present didactic George. May respect, and length of days, and comfortable repose, attend the brave, honest, kindly, pure-minded artist, humourist, moralist!"

MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART.

PORTRAITS
OF
MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART,

WITH

Biographical Memoirs.

THE PHOTOGRAPHS FROM LIFE, BY ERNEST EDWARDS, B.A.

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SIR JAMES RANALD MARTIN, C.B., F.R.S.

THIS distinguished surgeon, now Examining Physician to the Secretary of State for India in Council, was born about the year 1800, in the Isle of Skye, his father being the Rev. Donald Martin, his mother a sister of Adjutant-General Sir John Macdonald, G.C.B. Having acquired a knowledge of mathematics, geology, and physical geography at the Royal Academy of Inverness, under Professors Nimmo and Tullock, he resolved to enter the military service in a medical capacity. With this object he became, in 1813, a pupil at St. George's Hospital, London, and devoting himself with earnestness to the study of his profession under the advantages then enjoyed by that institution of the services of Sir Everard Home, Sir Charles Bell, Wilson, and Brodie, he, at the expiration of three years, passed his examination at the College of Surgeons, and in 1817 embarked for India. On his arrival at Calcutta, Mr. Martin passed quickly through the usual probationary course, and having joined the 17th and 59th Regiments, he was nominated Assistant Garrison Surgeon of Fort William. Here he greatly distinguished himself by the prompt skill and humanity which he displayed during an outbreak of malignant cholera, and in 1819 he was appointed First Assistant-Surgeon of the General Hospital of Calcutta. It was at this period that the subject of our memoir commenced that important study of the diseases of Europeans in India which led to the peculiar knowledge of tropical maladies upon which his reputation is mainly based.

In 1821, the Marquis of Hastings, then Governor-General of India, observing the rising talents of James Ranald Martin, and appreciating his unwearied devotion to the interests of the service, appointed him to the medical charge of his Body Guard, and, not

unfrequently in opposition to the Medical Board of Bengal, he carried into active operation several extensive sanitary improvements. In consequence of ailing health, Mr. Martin retired on sick leave to the Island of Mauritius; he returned, however, to his military duties in 1823, when he was summoned to Hyderabad to attend professionally on Sir C. Metcalfe, then dangerously ill; and now commenced a friendship with that illustrious Governor which continued uninterruptedly during the remainder of his life. Mr. Martin was summoned in 1826 to Barrackpore to attend Lord Amherst, and accepted the appointment of First Assistant-Surgeon to the General Presidency; he shortly, however, returned to Calcutta, and settling himself in that city in regular medical practice, he filled successively the offices of Surgeon to the Governor-General, Lord William Bentinck, of Presidency-Surgeon of Calcutta, and of Surgeon to the Native Hospital of Calcutta.

Mr. Martin continued to devote himself to the study of the diseases of both Europeans and natives, especially those of the Delta Ganges or Bengal proper, and drew up for the consideration of the Government a Report of the result of his investigations. In 1832, Mr. Martin originated and performed the now universally adopted operation for the radical cure of hydrocele by retained injection of diluted tincture of iodine. In 1835, he devoted his energies more especially to the subject of medical topography and statistics, and the practical results deduced from this elaborate inquiry being formally submitted to the Governor-General and to Sir C. Metcalfe, it was pronounced to be the most important sanitary measure for India that had been hitherto propounded. The author's suggestions for sanitary reform embraced an area larger than the whole of Europe, and they affected the well-being of more than a hundred millions of souls. Mr. Martin also submitted to the Government, about this time, a comprehensive plan for the cure and prevention of diseases prevailing more especially in Calcutta and its surrounding districts, which led to a Commission of Inquiry into the medical topography and health history of the locality, and to a series of legislative enactments by the Supreme Council of India, which have by their practical issue done a large amount of good, not only to the natives, but also to the resident Europeans. In 1838, Mr. Martin originated the great Fever Hospital of Calcutta, and shortly after, his health failing, he availed himself of the offer of the Governor of Bengal to retire for a time to his

residence at Barrackpore. He still occupied himself, however, in preparing a report on the relative and comparative salubrity of the line of the Valley of Irawaddy, and of that across the Araccan Mountains, in Upper Ava.

In January, 1840, Mr. Martin, to the warmly expressed regret of the Governors of the Native Hospital, left the scene of his twenty-two years' labours—a long period for official service in India—and returned to England. A large meeting of Mr. Martin's patients and friends was convened in the Town Hall of Calcutta, and a subscription was entered into for the presentation of a piece of plate, as a mark of the high esteem they entertained of his personal character and professional services. Sir Charles Metcalfe, writing to him soon after his arrival in London said, in reference to this testimonial: "The just compliment paid to you on quitting Calcutta must have been very gratifying. There is in such an indication of kind feeling, something that touches the heart, and produces some of the most pleasing sensations that we can experience, mixed, however, with pain at parting from those who show such friendship:" while Dr. Farr, of the Registrar-General's Office, alluding to the scientific and economic results of Mr. Martin's services, said, "I look upon the well-conducted sanitary reform commenced in Bengal as one of the most important undertakings of the age in India, useful to science and to England, and creditable to Sir J. R. Martin, with whom it originated."

In 1843, Mr. Martin was elected a Fellow of the Royal College of Surgeons, and has since acted with distinction as a Consulting Surgeon; not, however, to the neglect of his studies in sanitary science, for which he had been famous in India. He was appointed by the Government of Sir Robert Peel a member of the Royal Commission for inquiring into the sanitary condition of large towns in England and Wales, and served two years on this Commission, having in the meantime drawn up a Report, of which a large number were printed by the Government for general circulation. Subsequently, at the suggestion of the Duke of Buccleuch, he directed his attention to the sanitary condition of the French capital, and having proceeded to Paris for that purpose, he collected a number of valuable reports. In 1845, Mr. Martin assisted in publishing the well-known work of Dr. Robert Jackson, 'On the Formation, Discipline, and Economy of Armies,' and in the same year he was elected a Fellow of the Royal Society. In 1848, he

was employed by Government on a commission to report on the capabilities of metropolitan workhouses for the reception and treatment of cholera cases, when his Report was largely circulated. In 1859, Mr. Martin succeeded Dr. Scott as Physician to the India House, and in the following year he received the honour of Knighthood and was made Companion of the Bath.

Sir J. Ranald Martin is the author of a valuable treatise 'On the Influence of Tropical Climates on European Constitutions.' On the abolition of the East India Company, he received the appointment, corresponding to that which he previously held, of Physician to the Council of India.



THE REV. M. J. BERKELEY, M.A., F.L.S.

THE department of learning in which the subject of our present memoir ranks as the most eminent of living authors is that of cryptogamic botany. In early life Mr. Berkeley directed his attention to the study of our native land and freshwater mollusks, many of which he delineated with a degree of artistic skill and anatomical accuracy not previously attained in this country; but his genius for minute observation was soon drawn to that wider field of nature which includes seaweeds, mosses, lichens, funguses, and all minute forms of vegetable life, involving the most difficult and delicate microscopic investigation; and to the study of these, especially Fungi, he has devoted his life.

Miles Joseph Berkeley was born at Biggin, in the parish of Oundle, Northamptonshire, on the 1st of April, 1803; and is a lineal descendant of Thomas Berkeley, Esq., of Colwell, Herefordshire, youngest brother of Sir Robert Berkeley, one of the Judges of the King's Bench in the time of the Commonwealth, who was buried at Spetchley, in Worcestershire, where the family are now seated. Having received the earlier portion of his education at the Grammar School of Oundle, Mr. Berkeley proceeded to Rugby. In 1821 he was entered at Christ's College, Cambridge, of which he was a scholar, and in 1825 he graduated as 5th Senior Optime. Mr. Berkeley became attached to natural history from an early period; and his scientific tendencies, both zoological and botanical, which had been fostered at Rugby, were kept in action at Cambridge by an intimate acquaintance with the late Professor Henslow. His first attempts as an author were given in the London 'Zoological Journal,' in some papers on the Anatomy of Mollusca.*

* Some of Mr. Berkeley's early drawings were not published until they appeared in Mr. Lovell Reeve's recent work on the 'Land and Freshwater Mollusks of the British Isles.'

A summer residence at Loch Lomond in 1823, and at Oban in 1824, gave him opportunities of making considerable collections of specimens of the lower forms of animals and plants; and at the latter place he formed an acquaintance with a zealous and well-known botanist of that day, Captain Carmichael, who opened out to him his numerous discoveries in cryptogamic botany. The life of a naturalist is generally marked by a more than common spirit of perseverance and zeal; and we might follow Mr. Berkeley in his numerous researches at Torquay, Weymouth, and other favourite collecting localities on the British coast, but the details of these zoological and botanical explorations are better described in journals appropriated to those subjects. In 1826 Mr. Berkeley was ordained, and after a short residence in two small curacies, he entered, in 1829, on the more important curacy of Margate. His leisure time, though very limited, was still devoted to scientific pursuits, and he pursued his anatomical studies with Mr. G. H. Hoffman, in conjunction with whom he published a detailed anatomy of a curious mollusk inhabiting the swamps of India (*Cerithium telescopium*), from living specimens sent to England by Mr. Benson.

While residing previously at Stibbington, in Huntingdonshire, Mr. Berkeley made a large number of drawings of Fungi, and was so fortunate, in the course of his researches, as to ascertain the real structure of the hymenium in Agarics, though the discovery was not published till some years later. When Sir W. J. Hooker was engaged upon the cryptogamic volume of the 'English Flora,' Mr. Berkeley offered him the use of these drawings, and Sir William thereupon invited him to undertake the preparation of the Fungi. About the same time Mr. Sowerby requested him to record the observations he had made on new and rare Algæ, in a sort of supplement to 'English Botany,' under the title of 'Gleanings of British Algæ.' The volume on Fungi in the 'English Flora' appeared in 1836; and since that period so many collections of exotic Fungi have been submitted to Mr. Berkeley for examination, such, for example, as the Fungi collected during the Antarctic Exploring Expedition by Dr. Joseph Hooker, that he has almost retired from the investigation of other cryptogamic forms, except so far as may be necessary to acquire an intimate acquaintance with their general structure and the development of vegetable tissue.

In 1833 Mr. Berkeley was presented to the two small perpetual

curacies of Apethorpe and Woodnewton, Northamptonshire, which he holds at the present time, and in which he continues to find leisure for his favourite pursuits. A connection with the 'Gardeners' Chronicle' has, during this time, led him to pay much important attention to the diseases of plants, not only as connected with parasites, but with morbid conditions of their tissues; and the results of his investigations have been published in that journal in a long series of articles on vegetable pathology, which, we trust, will ere long be given to the public in a separate form. Among other subjects a study of the Potato Murrain was necessarily induced, and, in later years, of Vine and Hop Mildew. From the very first Mr. Berkeley was convinced that Potato Murrain was due to the agency of a minute fungus (*Botrytis infestans*), an opinion in which he has never wavered, and which is almost universally acknowledged to be correct. In like manner, Vine Mildew was pronounced to be the work of a fungus (*Oidium Tuckeri*), a decision which was rewarded by the French Government with a portion of the grant of money awarded to those who had worked out the history of this important disease.

In 1857 Mr. Berkeley published a valuable 'Introduction to Cryptogamic Botany,' in one thick octavo volume, and in 1860 a volume of nearly similar dimensions, entitled 'Outlines of British Fungology,' containing descriptions of above a thousand species, copiously illustrated, with a perfect list of the smaller species, which has been followed by an equally elaborately illustrated 'Handbook of the British Mosses.'

Mr. Berkeley was elected a Fellow of the Linnean Society in 1836, and is a Member of several Foreign Societies. The latest honour received by Mr. Berkeley was the award, in the present session, of one of the Royal Society's Royal Medals, with the following address from the President:—

"Mr. Berkeley's labours as a cryptogamic botanist for upwards of thirty-five years, during which they have been more especially devoted to that extensive and most difficult order of plants the Fungi, have rendered him, in the opinion of the botanical members of the Council, by far the most eminent living author in that department. These labours have consisted in large measure of the most arduous and delicate microscopic investigation. Besides papers in various journals on Fungi from all parts of the globe, and in particular an early and admirable memoir on British Fungi,

the volume entitled 'Introduction to Cryptogamic Botany,' published in 1857, is one which especially deserves to be noticed here. It is a work which he alone was qualified to write. It is full of sagacious remarks and reasoning; and particular praise is due to the special and conscientious care bestowed on the verification of every part, however minute and difficult, upon which its broad generalizations are founded. Mr. Berkeley's merits are not confined to description or classification; there are facts of the highest significance, which he has been the first to indicate, and which, in many cases, he has also proved both by observation and experiments. We refer to his observations on the development of the reproductive bodies in the three orders of Thallogens—Algæ, Lichens, and Fungi—and on the conversion, under peculiar conditions, of certain forms of their fruit into others;—to the exact determination of the relations and sometimes of the absolute specific identity of various forms of Fungi previously referred to different tribes; and to the recognition, in many species and genera, of a diversity of methods of reproduction in giving origin to parallel series of forms. As intimately connected with the life-history of Fungi, the intricate subject of vegetable pathology has been greatly elucidated by him; and he is indeed the one British authority in this department. His intimate acquaintance with vegetable tissues, and with the effects of external agents, such as climate, soil, exposure, etc., has enabled him to refer many maladies to their source; and to propose methods, which in some cases have proved successful, of averting, checking, and even curing diseases in some of our most valuable crops. In this line of research he has also demonstrated on the one hand that many so-called epiphytal and parasitic Fungi are nothing but morbid conditions of the tissues of the plant; on the other hand, that microscopic Fungi lurk and produce the most disastrous results where their presence had been least suspected."



SIR GEORGE THOMAS SMART, KT.,

HONORARY MEMBER OF THE MUSEUM OF SALZBURG, ETC. ETC.

GEORGE THOMAS SMART, one of the few remaining links between the musical celebrities of the past and present times, was born in London, on the 10th of May, 1776. At a very early age he manifested a taste for music, and gave so promising an indication of correctness of ear, that his father, himself connected with the musical profession, determined to encourage it. Of the three chief metropolitan schools of music then existing—St. Paul's, Westminster Abbey, and the Chapel Royal, St. James's—the last was selected as the best for the training of its future composer and organist; and it soon became apparent, from the assiduity with which he prosecuted his studies under the tuition of Dr. Ayrton, and the aptitude he evinced in mastering the technicalities of the art of composition, that a brilliant career was before him.

Although the tendency of a cathedral training, under which the musical tuition of the Chapel Royal wholly ranges, is much more conducive to promote the cultivation than to facilitate the development of the more serious styles of progressive harmony, yet the youthful aspirant did not permit himself to be trammelled by its heavy rules and severe proportions. Handel had only been dead seventeen years when George Thomas Smart was born, and the influence of that master's majestic compositions, better appreciated afterwards than previously to his decease, was rapidly increasing. The attention of the juvenile student was naturally drawn to Handel's larger and broader compositions. Nevertheless he did not, on this account, neglect that master's lighter specimens, which had been written during his earlier career for the Italian opera,

which he may be said to have introduced into England. These, indeed, he carefully noted and studied, no less than the more stupendous passages of the great German's massive oratorios. Intuitively of a lively and versatile temperament, as he has continued to be throughout a long and highly successful life, George Thomas Smart, upon leaving the Chapel Royal, was attracted to the great metropolitan theatres, where Dr. Arne had made "the power of music" to be so much felt, as to have caused English opera to become a rival of the drama. Into the progress of musical dramatic art he threw himself at once, with the greatest energy; and by the skill with which he arranged and directed the performances at the houses in which he was engaged, he elevated the tone and increased the popularity of this comparatively novel means of public entertainment. During the years, however, in which his more arduous services were demanded by professional and theatrical engagements, he did not cease to pay attention to the cathedral services of the Church; but becoming, at the Chapel Royal, the deputy of Dr. Dupuis, who had given him lessons on the organ, whilst John Baptist Cramer was his master for the pianoforte, and at Westminster Abbey of Dr. Arnold when he had scarcely reached manhood, he prosecuted his studies with the utmost perseverance, being determined to rise in his profession rather by the legitimate means of scholarship and talent than by mere favoritism or patronage. The activity of the early career of George Thomas Smart was indeed a source of constant remark amongst those who were aware of the numerous duties he punctually and assiduously fulfilled; whilst his invariable aptitude for meeting and overcoming difficulties, and his invariable kindness of disposition and happy tact in allaying the differences of contending musicians,—always, like poets and authors, an *irritable genus*,—endeared him to all classes with whom he was brought in contact.

In the year 1811, being called to Dublin to conduct a series of musical performances, the Duke of Richmond, at that time Viceroy of Ireland, conferred upon him the honour of knighthood, as a mark of consideration for the efficiency of his arrangements, and especially for the manifestation of his musical talents. From that time he was invariably known in his profession as Sir George Smart.

Having now permanently established his reputation, Sir George Smart, on his return to London, assumed the highest grade in the

musical profession—that of an orchestral conductor. The advance of music in popular favour had not then attained to anything approaching the dimensions it has now assumed. The patronage bestowed upon it was, in a measure, merely partial, and emanated rather from the rich and prosperous than from the multitude. The performance of Handel's oratorios, during the season of Lent, attracted some attention; but until Sir George Smart was entrusted with the direction, they met with little consideration, and were shorn of half their importance. During the thirteen years that he filled this arduous post at Drury Lane and Covent Garden theatres, contending against the frivolities of one set of patrons, and the requirements of another, as well as against a large amount of public indifference, he yet managed to assert the claims of the higher works of musical science; and however much he was pained and annoyed at the necessity for interspersing with lighter and more frivolous compositions one part at least of those Lenten entertainments, designated by the name of Oratorios, he permitted no season to pass without having done something to ensure progress. Even so early as the year 1814, the second season of his Oratorio administration at Drury Lane Theatre, he contrived to introduce, on the 25th of February, Beethoven's "Christus am Oelberge," better known in this country as "The Mount of Olives." He also brought out, at the same theatre, on the 10th of February, 1815, that master's celebrated "Battle Symphony." Although, however, the former work failed to obtain the general appreciation to which Sir George Smart was convinced the genius of Beethoven was entitled, it yet marked a period in the advancement of musical science, which led up to that appreciation of the great master which is now of world-wide extent. Of the capability Sir George Smart manifested at this period of his career as a conductor, it was well said by a severe but honest critic,—“That no man in the profession possessed so large an experience, so acute and so sound a tact, so profound a judgment in apprehending what would take most surely with the public, such unwearied energy and steadiness in the prosecution of a plan, and such promptitude in seizing an advantage or repairing an unexpected evil, as Sir George Smart.”

In 1816 Sir George Smart was selected, as one of the most eminent musicians of the time, to take part in the conducting of the concerts of the Philharmonic Society, which had been insti-

tuted three years before for the performance of the works of the more celebrated modern masters. During his membership with this Society, Sir George Smart invariably evinced the spirit of a true *artiste*; for not only did he occupy the post of conductor at forty-nine concerts between the years 1816 and 1844, when he resigned his appointment, but he never hesitated to undertake a minor duty, if the perfection or success of a performance could thereby be heightened. Thus, when Haydn visited London in 1791, to produce the first six of those great master-pieces—his twelve Symphonies written to Salomon's order—he undertook on one occasion to beat the drums, and faithfully and diligently observed and carried out the great *maestro's* wishes and directions.

A few years previously to Sir George Smart's retirement from a share in the immediate direction of the Philharmonic Concerts, at which his services were always given gratuitously, he was presented by the wind instrument performers of the orchestra with an elegant *bâton*, upon which the names of the donors were engraved, as a mark of their high esteem and respect. He did not, however, cease to be a member of the Philharmonic Society on account of his retirement from his share in the musical direction. He and Mr. Charles Neate, the once eminent pianist, the friend of John Baptist Cramer, are the only persons now living who were amongst the original founders of the Society in 1813.

Whilst thus actively engaged as the conductor of oratorios and secular concerts, Sir George Smart still adhered to his attachment for the cathedral school in which he had been originally trained; and having been appointed in 1822 one of the organists, and in 1838 one of the composers, of the Chapel Royal, St. James's, he found time not only to fulfil the duties of the former position, but to add to the roll of classical productions which a long succession of eminent musicians, from the time of the Reformation, had provided for the services of the Church. Scarcely any of these compositions have hitherto been published, but it will be a gratification to the musical world to know that Sir George Smart is preparing, and has almost completed, an entire series of his Cathedral Services and Anthems, which have received her Majesty's permission to be dedicated to herself. He has also recently published a selection from his Glees.

In the discharge of his functions as one of the organists of the Chapel Royal, Sir George Smart presided at the organ at the

funeral of George IV.; at the coronation and funeral of William IV.; at the coronation and marriage of her Majesty; and at many other royal and public ceremonies of importance.

In 1834, it was determined to celebrate, in Westminster Abbey, the seventy-fifth anniversary of Handel's death, and on this occasion the entire musical arrangements were placed in Sir George Smart's hands. The successful issue to which he brought that great and arduous undertaking may be inferred from the testimony borne to the efficiency of the entire proceedings by the performers, who presented him with a costly and massive silver inkstand, bearing the following highly flattering, but no less well-merited inscription :—

“Presented to Sir GEORGE SMART by the vocal and instrumental performers engaged at the Royal Musical Festival held in Westminster Abbey, 1834, under the patronage of their Most Gracious Majesties King William IV. and Queen Adelaide, to mark their esteem for his character as a man, and his talent as a musician; also, as a token of their approbation of the able manner in which he conducted the performances.”

The metropolitan reputation of Sir George Smart naturally ensured for him many provincial engagements, where his talents were as fully appreciated as his character was respected. In the course of his lengthened career, he conducted musical festivals and concerts in no less than twenty-three provincial cities and towns, viz. Bath, Bristol, Edinburgh, Reading, Liverpool, Manchester, Birmingham, Norwich, Newcastle-on-Tyne, Bury St. Edmund's, Dublin, Derby, Cambridge, Hull, Greenwich, Woolwich, Colchester, Brighton, Coventry, Cheltenham, Nottingham, Clifton, and Hereford. The most remarkable perhaps of all these provincial engagements was that which he undertook at Norwich in the autumn of 1824. So successful, indeed, was the well-remembered festival of that year, and so entirely was its musical efficiency attributable to Sir George Smart, that the Committee of Management voted him a gold snuff-box of the value of thirty guineas; whilst the Corporation—as that of Dublin had previously done—conferred the Freedom of the City upon him, “for the zeal, energy, and ability he had exerted.”

In the year 1825, Sir George Smart was induced to pay a visit to Vienna, where he was most cordially received and welcomed by Beethoven, whose genius he was one of the first musicians of this country to acknowledge. His chief object in undertaking so long

and tedious a journey as was the transit from the English to the Austrian capital at that period, was to ascertain from Beethoven himself the *times* of his Sinfonias and other compositions, in order that they might be rendered in England according to his own express wish and determination. In this respect Sir George Smart was as greatly interested as he has always been in preserving and maintaining the traditions of Handel, which he himself received from Joah Bates, who had taken them immediately from Handel himself. As to the method which the great master of oratorio adopted in giving the accurate time of his various works according to his own will and purpose, and also as to the manner in which his songs were rendered by Madame Mara, Mrs. Billington, Mrs. Salmon, and Miss Stephens, by Harrison, Bartleman, Braham, and Vaughan, no one could have more accurate information than Sir George Smart himself. Not only was he taught by the friend whom Handel himself had directed, but he had heard all the older, and instructed most of the younger, of the above-named singers in the very method originally intended. It may be a source of congratulation to the musical world to learn that "those traditions" will not be lost, Sir George Smart having, with the utmost care and pains, prepared a work, which, it is to be hoped, may soon be published, in which each is in every particular preserved.

On returning from his visit to Beethoven at Vienna, Sir George Smart made the acquaintance of Mendelssohn at Berlin, and induced him to visit England; and it is not amongst the least of the honours which he has attained in the course of his eminent career, that he may be said to have introduced Mendelssohn's great specimen of pure oratorio composition, 'St. Paul,' to the English public, having himself conducted its first performance at Liverpool, in the autumn of 1836. Between Mendelssohn and Sir George Smart, esteem and affection were indeed as mutual as the same sentiments had been between Weber and himself. He was, indeed, the first amongst the musicians of his country to recognize the talents of the composer of 'Der Freischütz' as of the author of 'The Mount of Olives,' and to make them known by the introduction of the overture of the former work at those festivals and concerts which he conducted. The performance of the overture to 'Der Freischütz' speedily led to the production of one or more versions of the entire opera at several of the great

London theatres. Its success, although it was presented in a somewhat mutilated form, made the author so popular in England that nothing appeared to promise greater *éclat* than to engage him to compose, and bring him over to conduct, the music of another opera. For this purpose Sir George Smart proceeded to Germany in company with Mr. C. Kemble, the result being the engagement of Weber to write his last opera, and to support by his presence the reputation he had already gained in England. On reaching London, Weber became the inmate of Sir George Smart's house in Great Portland Street, and there he completed the entire score of 'Oberon,' the *libretto* of which was supplied by Mr. Planché. When this celebrated musician arrived in this country, in the month of March, 1826, he was in the last stage of consumption; he, however, brought out his opera, and continued to fulfil his public engagements and prosecute his private studies with the utmost assiduity and cheerfulness. He had even fixed to leave England on his return to Germany on the 7th of June; but on the morning of the 5th, he was found dead in his bed in Sir George Smart's house, which he had never left as a place of residence from the time of his arrival.

From the position Sir George Smart occupied as organist and composer of the Chapel Royal, and from the skill and tact he invariably manifested in the direction both of sacred and secular music, he obtained the patronage and encouragement of several members of the Royal Family, nearly all of whom, especially the Prince Regent, afterwards George IV., and the Duke of Sussex, were sound and accomplished musicians. So greatly, indeed, did he enjoy the confidence of the latter Royal Duke, that he was nominated by him to the office of organist of "The United Grand Lodge of Free and Accepted Masons," of whom he (the Duke of Sussex) was for many years the Grand Master. The wisdom of this appointment was apparent at all the great Masonic Festivals, since a rich musical treat was provided for the entertainment of the brethren of this ancient and mysterious Order, the compositions selected for illustration being always of so classical a character as to add quite as much to the charm as to the celebrity of those popular *réunions*.

Among the many professional pupils who have had the advantage of Sir George Smart's tuition, the following may be named as having obtained something more than a transient or ordinary

celebrity, viz. Miss Paton (now Mrs. Wood), Miss Louisa Pyne, the Misses Cawes, etc. etc., Messrs. T. Welsh, Henry Phillips, and Lockey, and more especially for sacred music and the traditions of Handel and the English masters, Mme. Sontag, Mme. Lind-Goldschmidt, Mme. Rudersdorff, and Signor Belletti.

Throughout a lengthened and an arduous career, Sir George Smart rose to eminence and estimation,—acknowledged quite as much upon the Continent as at home,—by his general acquaintance with the details of business, by gentlemanly manners, by skill in his profession, and by honour and integrity in its exercise, no less than by a liberality which was both generous and beneficial to those towards whom it was extended. To many an unfortunate and unsuccessful *artiste* he has afforded sympathy and aid, quite as much by his advice and counsel as by his purse. Beloved by his family, respected by his friends, his society has ever been eagerly sought by those who appreciate worth. He has attained a good old age, is still active and cheerful, and possessed of all his faculties, taking as deep an interest as ever in the progress of his art, and manifesting the same genial and versatile disposition which has endeared him to all who have had the privilege of his friendship and esteem.



ANTONIO PANIZZI.

IN a work, the object of which is to illustrate Literature, Science, and Art, by the biographies of men eminent in the cultivation of those branches of human knowledge, some notice of the career of the Principal Officer of the British Museum ought to be found. Placed at the head of an Institution comprehending in itself the finest specimens of ancient art, the varied productions of nature, and one of the largest libraries in the world, he cannot but exercise an important influence over every channel of human thought.

Antonio Panizzi was born at Brescello, in the Duchy of Modena, on the 16th of September, 1797. Modena at that time formed a part of the Cisalpine Republic. After prosecuting his studies in the Lyceum at Reggio, where he remained until about seventeen years of age, he proceeded to the University of Parma. In 1818 he took his degree of Doctor of Laws, and then quitted the University and prepared himself for practice in the superior branches of the legal profession. Taking a deep interest in the political state of his native country, he, while yet a student, entered into the revolutionary movement which ultimately broke out in Naples in 1820, and in Piedmont in the following year. In this year his participation was made known to the Modenese authorities, through the weakness of one of the conspirators, and he judged it prudent to provide for his safety. He therefore quitted Brescello, and when at Cremona narrowly escaped seizure. A polite message was conveyed to him from the commissary of police, requesting his attendance, and it was from the office of this functionary that he saved himself by a hasty flight. The charge against him was tried in his absence, he was found guilty *per contumaciam*, and sentenced to death and the confiscation of

his property. He first sought a refuge in Lugano, the capital of the Swiss Canton of Ticino, but was obliged to quit it on the demand of Austria, and betook himself to Geneva. Here, however, he was not allowed to remain in peace. The representatives of Austria, France, and Sardinia, demanded the expulsion of himself and other Italian political refugees from the soil of Switzerland, who therefore determined to proceed to England. Being desirous of taking the route through France, but uncertain whether they would be allowed to do so, they sent forward one of their number (Mr. Aubrey Bezzi), as a pioneer. He was stopped at Gex, stripped, and nothing being found upon him, was ordered to return, whereupon they made their way by the Rhine and the Netherlands, and arrived in England in the month of May, 1823. Mr. Panizzi remained for some months in London, and then, on the recommendation of his friend Ugo Foscolo, he turned his steps towards Liverpool. He was received with more than friendly interest by Dr. Shepherd, the author of the life of Poggio Bracciolini, and by William Roscoe, the author of the Life of Leo X., to both of whom Foscolo introduced him, and by whom he was soon treated as a son. He spent here several years, maintaining himself by teaching his native language, and enjoying the best society of the place. In 1828, when the London University was founded under the auspices of Lord Brougham, Mr. Panizzi was invited by the noble lord to fill the chair of Italian Language and Literature, and after hesitating some time whether he should give up the agreeable society he was then enjoying for a new career, he accepted the proffered chair. In March, 1831, the post of extra-assistant keeper in the Department of Printed Books in the British Museum became vacant, and by the support and influence of Lord Brougham, who had by this time become Lord Chancellor, and other influential friends, Mr. Panizzi obtained the appointment. He was now in a situation in which he might indulge his taste for books, and soon distinguished himself by his energy and bibliographical acquirements.

The library of the British Museum was at this time in a very unsatisfactory state; although extensive, the deficiencies in every branch were large and important, and there was no regular annual grant by which these *lacunæ* could be filled up. In 1835 and 1836 a Committee of the House of Commons was appointed to inquire into the state of the Museum, and Mr. Panizzi was ex-

mined as a witness. In his evidence before the Committee he stated his views freely, and suggested many improvements which he has subsequently been enabled to carry out. He also visited the Continent, for the purpose of examining foreign libraries, and, with the view of aiding the inquiry, collected a vast mass of highly interesting and important particulars respecting them. In short, while some of the witnesses showed what the library had been and was, and explained why it could not at that time be better, Mr. Panizzi showed what it ought to be, and how it might be made so.

This inquiry led to great alterations in the system of management. It gave the first impulse to the changes which have subsequently taken place in the Institution, and opened the way to the great development it has subsequently undergone. It was felt that a young and vigorous man was wanted at the head of the Department of Printed Books, and when Mr. Baber, the then keeper, resigned his post in June, 1837, Mr. Panizzi was appointed to be his successor. He now found ample employment for all his strength and energy. The printed books were to be removed from Montague House to a new library, occupying the ground-floor of the north wing of the new building; the different catalogues of the collection under his charge, which had been drawn up at different times, and on various plans, were to be revised and reduced to one catalogue, compiled on one general plan, and additions were to be made to the library on a larger scale than heretofore. The service of the Reading-room underwent revision, with the double object of supplying books more readily to the readers, and increasing the safeguards of the collection. To suggest, organize, and superintend at this period, involved a vast amount of labour. He was anxious that the National Library should be worthy of the nation, and keeping this object constantly before him, he endeavoured to make every step tend towards this point. In 1845 he laid before the Trustees a report, showing the great deficiencies in the library. This report having been approved by the Trustees, was submitted to the Lords of the Treasury in December of the same year, and ordered to be printed by the House of Commons, 27th March, 1846. This led to the grant of the sum of £10,000 annually for the purchase of printed books, until the deficiencies were filled up. At the expiration of two years, however, the state of the public finances rendered it advisable to

reduce this grant, and indeed had this cause not arisen, the limited space in the library for new acquisition would have rendered such a step necessary.

Mr. Panizzi's exertions were not always sweetened by the approval of those in whose behalf they were made. The question of the revisal and re-adjustment of the catalogue led to much discussion. Some wished things to remain as they were; some objected to the plan upon which it was determined that the new catalogue should be drawn up; some, again, objected because they could not get books which did not exist; and those who knew nothing about the matter were the greatest objectors of all. It was natural that this state of things should result in something, and they did result in a commission to inquire into the constitution and management of the British Museum, which held its first sitting on the 10th of July, 1847. Mr. Panizzi took this opportunity to challenge all who disapproved in any way of the manner in which he administered the affairs of the department under his charge, to come forward and state their objections before the Commissioners. This challenge was very extensively accepted, and Mr. Panizzi was thus enabled to explain his motives and justify his proceedings to the full satisfaction of the Commissioners, while under an examination which lasted eighteen days. The report of the Commissioners is the best comment upon these attacks. They say:—"We have had occasion, in the course of our inquiry, to ascertain the prevalence, among many persons, of an impression which attributes to that gentleman (Mr. Panizzi) not only the adoption of a plan for a catalogue, of which those parties, on various grounds presently to be noticed, disapprove, but also the delay of which they complain in the execution of the plan so adopted. It becomes our incidental duty to do him justice in these particulars. From what we have already stated, it will appear that, with respect to the system and form of the catalogue, whatever be its defects, Mr. Panizzi can be charged with nothing further than the constant approval and acceptance of one leading principle, that of fulness and accuracy, suggested on high authority, adopted by an able superior and predecessor in office, indicated by the statutes of the Museum, and enforced by the deliberate sanction of the Trustees and the recommendations of a Parliamentary Committee." Again:—"Whatever be the judgment formed on the points at issue, the pages in question (*i. e.* Mr. Panizzi's evidence) contain

frequent proofs of the acquirements and abilities, the manifestation of which in subordinate office led to Mr. Panizzi's promotion to that which he now holds, under circumstances which, in our opinion, formed on documentary evidence, did credit to the principal Trustees of the day."

It is unnecessary to multiply extracts. It will suffice to say that Mr. Panizzi satisfied not only the Commissioners, but the public, for no more complaints have been heard from that time.

The want of space for the collection was an evil which became more and more serious, and after various schemes had been proposed and rejected, a plan, submitted by Mr. Panizzi, was adopted by the Trustees. This plan comprehended the erection of a new Reading Room, with surrounding library, in the inner quadrangle of the Museum. It was laid before the Trustees on the 5th of May, 1852, and after full investigation and discussion, was adopted, and the excavations were commenced in the month of May, 1854. The first brick was laid in the September of the same year; the first iron standard was fixed in the month of January, 1855; and in the month of May, 1857, the structure was completed. This building is 258 feet long by 184 in width, and covers an area of 47,472 square feet. The construction is quite novel; it may not, therefore, be uninteresting to give some details respecting it. The Reading Room is circular. The dome is 140 feet in diameter, and its height 106 feet. The diameter of the lantern is 40 feet. In its diameter the dome of the Reading Room exceeds all others, with the exception of the Pantheon of Rome, which is about two feet wider. The surrounding libraries are 24 feet in height, with the exception of that part which runs round the outside of the Reading Room, which is 32 feet high, the spring of the dome being 24 feet from the floor of the Reading Room, and the ground excavated 8 feet below this level. The new Reading Room contains 1,250,000 cubic feet of space, and the surrounding libraries 750,000. Upwards of 2000 tons of iron have been employed in the construction of the Reading Room and the surrounding libraries. The weight of the materials used in the dome is about 4200 tons, or upwards of 200 tons on each of the 20 iron piers by which the dome is supported. The quantity of glass used amounts to about 60,000 superficial feet.

The Reading Room will accommodate 302 readers, each of whom has allotted to him a space of at least 4 feet 3 inches in

length, by 2 feet 1 inch in depth. He is screened from the opposite occupant by a longitudinal division, which is fitted with a hinged desk, graduated on sloping racks, and a folding shelf for spare books. The framework of each table is of iron, forming air-distributing channels. A tubular footrail also passes from end to end of each table, which may have a current of warm air through it at pleasure, and be used as a foot-warmer if required.

The arrangement of the presses is peculiar throughout the new libraries. The shelves within the Reading Room contain about 60,000 volumes of more than average size; the new building altogether will accommodate about 1,300,000 volumes. The standards of the bookcases are formed of malleable iron, galvanized and framed together, having fillets of beech inserted between the iron to receive the brass pins upon which the shelves rest. The framework of the bookcases forms the support for the iron perforated floors of the gallery avenues, which are generally 8 feet wide.

The shelves are formed of iron galvanized plates, edged with wainscot, and covered with russet-hide leather. The shelves rest upon brass pins, the holes for which are pierced at $\frac{3}{4}$ of an inch apart from centre to centre; but by a contrivance in cranking the shaft of the pin, which may be turned upwards or downwards, this interval may be halved, and the position of the shelves may be altered $\frac{3}{8}$ of an inch at a time. There are 2,750,000 of these holes. The building contains 3 miles lineal of bookcases 8 feet high; assuming them all to be spaced for the size of the average octavo volume, the entire ranges form 25 miles of shelves.

The inner surface of the dome is divided into 20 compartments by the moulded ribs, which are gilded with leaf prepared from unalloyed gold, the suffites being in ornamental patterns, and the edges touching the adjoining margins fringed with a leaf-pattern scalloped edge. Each compartment contains a window (having double sashes), with hot-water pipes between them, with three panels above, the central one being medallion-shaped; the whole bordered with gilt moulding and lines, and the field of the panels finished in encaustic azure blue, the surrounding margin being of a warm cream-colour. The details of the windows are treated in like manner. The moulded rim of the lantern light is painted and gilded to correspond. The sash is formed of gilt moulded ribs radiating from a central medallion, in which a monogram, formed of the letters V. A., is alternated with the imperial crown. The

cornice from which the dome springs is massive and almost wholly gilded. Each compartment of the dome is marked by a bold enriched gilt console, which forms at once the support of the main rib and the base for a colossal marble statue, a series of which, it was proposed in Mr. Panizzi's plan, should be placed on the cornice.

The above description may enable the reader to form some idea of the result of Mr. Panizzi's plan. A more perfect success could hardly have been anticipated or desired, and the constant applications for admission, both for the purposes of study and to view the building, show that both the reading and sight-seeing public have fully appreciated the boon conferred upon them. The bust of Mr. Panizzi, executed by Marochetti, and placed over the door of the Reading Room, in the passage from the entrance-hall, was a very pleasing memorial from the department of Printed Books. This bust was paid for by subscription from every person in that department, no others being allowed to contribute.

In the month of February, 1856, Sir Henry Ellis retired from the service of the Trustees, and Mr. Panizzi was appointed to succeed him as principal librarian (or, in other words, as the chief officer or administrator of the whole Museum) on the 6th of March following, being about a month before the completion of the new reading-room and libraries.

The same energy and ability which marked his career as keeper of the printed books have not deserted him as principal librarian. Many subjects out of the ordinary routine of his duties have demanded his attention, of which the most important is the question of space for the constantly-growing collections. One of the early fruits of the construction of the new reading-room and library was the regranteeing the annual sum of £10,000 to the department of printed books, and which has been continued for the last seven years. But the other departments remained as much inconvenienced by want of room as before. Mr. Panizzi, in his evidence before the Committee of the House of Commons in 1835-36, expressed his opinion that it would be for the advantage of the Museum and of natural history that the collections then under the roof of Montague House should be separated, and the portion relating to natural history be removed elsewhere. This opinion he has always conscientiously maintained, and repeatedly urged; and a plan which he drew, embracing alterations and additions to the present

Museum building, to adapt it for the collections of art and literature after the removal of those relating to natural history, has been generally approved by the Trustees and the Governors. The principle of separation has thus been adopted by a majority of the Trustees and by the Government, but the sanction of the House of Commons has not yet been given to it. It depends upon this decision whether the study of natural history is to be worthily promoted in this country, or to be cramped and checked by retaining the collections which are necessary for its development as an inferior portion of the great national Museum, where there is no room for them, instead of giving them a capacious home of their own.

Mr. Panizzi has been so much occupied in providing literary materials for others that he has had little leisure for literary labours himself. His works, however, are:—1. *An Elementary Italian Grammar*, 12mo, London, 1828. 2. *Extracts from Italian Prose Writers*, 12mo, London, 1828. 3. *Orlando Furioso di Bojardo, Orlando Furioso di Ariosto, with an Essay on the Romantic Narrative-Poetry of the Italians; Memoirs and Notes*; 9 vols. 8vo, London, 1830–34. 4. *Sonetti e Canzoni di Bojardo*, edited with notes, 4to, London, 1835; printed for private circulation. 5. *On the Supply of Printed Books from the Library to the Reading Room*, 8vo, London, 1846; printed for private circulation. 6. *A short Guide to that portion of the printed books [in the British Museum] now open to the public*, 12mo, London, 1851. 7. *Chi era Francesco da Bologna? 16mo, London, 1858; an Essay to prove that Francesco da Bologna, the artist who cut the types for Aldus, was the celebrated painter Francia*; printed for private circulation. 8. *Le prime quattro edizioni della Divina Commedia; letteralmente ristampate per cura di G. G. Warren, Lord Vernon; edited by A. Panizzi; folio, London, 1858.* Mr. Panizzi has also contributed articles to the 'Quarterly,' 'Edinburgh,' and 'North British' Reviews.

It is known to the writer of this memoir that about two years ago the honour of knighthood was offered to Mr. Panizzi, in recognition of his public services, but was by him respectfully declined. The honorary degree of D.C.L. was conferred upon him by the University of Oxford.



JOHN TYNDALL, F.R.S., ETC.,

PROFESSOR OF NATURAL PHILOSOPHY IN THE ROYAL INSTITUTION AND
IN THE ROYAL SCHOOL OF MINES.

ABOUT the middle of the seventeenth century, some members of one of the English families of the name of Tyndall or Tyndale emigrated to Ireland, on the eastern or Saxon fringe of which island a few of their descendants are still scattered. Their fortunes, as to social position, have been various; but probably to no member of the family fell a more lowly lot in life than to John Tyndall, the Professor's father, though few of them, perhaps, merited a higher. He was a man of personal courage, intellectual power, and delicacy of mind and feeling. From his forefathers he inherited a taste for religious controversy, as far as this related to the Churches of Rome and England, and thus the earliest intellectual discipline of his son consisted in exercises on the doctrines of Infallibility, Purgatory, Transubstantiation, and the Invocation of Saints. The works of Tyndale, Chillingworth, Tillotson, Faber, Poole, and others, constituted, in fact, the first text-books of the future natural philosopher. By the silent operation of his character—by example as well as by precept—this remarkable man inspired the intellect of his boy, and taught him to love, above all things, a life of manly independence. He died in May, 1847, quoting to his son a little before he died the words of Wolsey to Cromwell, "Be just, and fear nothing."

Professor Tyndall's earliest education was received at a school in the neighbourhood of Leighlin Bridge, in which village he was born about 1820. Mr. John Conwill, one of his tutors, appears to have possessed considerable mathematical knowledge, and to have been the first to impart to his pupil a decided taste for pure

geometry. In the year 1839 Mr. Tyndall quitted school, to join, in the capacity of "civil assistant," a division of the Ordnance Survey, which was stationed in his native town, under the command of Lieutenant George Wynne, now Colonel Wynne, Commanding Engineer at Corfu. He joined the Survey with the determination to make himself master of all its details, and, thanks to the excellent officer and true gentleman under whose superintendence he found himself, he was enabled to carry out his resolution. He quickly acquired a practical knowledge of every branch of the Survey; he became in turn a draughtsman, a computer, a surveyor, and a trigonometrical observer; and in subsequent years turned his experience to account in his investigations on Alpine Glaciers.

A simple circumstance which occurred to Mr. Tyndall in 1841, when he was stationed in Cork, and which, as he has often related to us, formed a kind of turning-point in his career, ought here to be noted. At that time he worked, at mapping, in the same room with Mr. Lawrence Ivers, a pupil of Lovell Edgeworth, of Edgeworthstown, and a very able man. Ivers was looked up to with great respect by his younger colleagues, the most of whom, like himself, were Catholics. Various circumstances connected with young Tyndall's work and conduct were noted by Mr. Ivers; and one day, while walking with his young friend across the barrack-square of Cork, he asked him how his leisure hours were employed. The answer not being quite satisfactory to him, he rejoined, "You have five hours a day at your disposal, and this time ought to be devoted to systematic study. Had I," he continued, "when I was your age, had a friend to advise me as I now advise you, instead of being in my present subordinate position, I should be the equal of Colby.* Next morning, Tyndall was at his books before five o'clock, and for twelve years never swerved from the practice.

In 1844, seeing no definite prospect before him, Mr. Tyndall resolved to go to America, whither, in the early part of the present century, some members of his father's family had emigrated.†

* Colonel Colby was then Director of the Ordnance Survey.

† One of these is at the present moment a distinguished officer in the Federal army. This is the Hector Tyndale who, some years ago, to use the words of Mr. Wendell Phillips, went down to Harper's Ferry with his life in his right hand to receive the dead body of John Brown, and deliver it over to his widow. We may add, too, that by a curious coincidence, Major Tyndale

The intention, however, was opposed by many of his friends, and by none so strenuously as by Richard Boyle Bernard, Dean of Leighlin, a descendant of Robert Boyle, the natural philosopher. The extraordinary development of our railway system occurred at this juncture, and happily kept Mr. Tyndall at home. In 1844 he was engaged by a firm in Manchester, and in the autumn of that year was occupied with engineering operations in the pleasant valleys of the Churnet and the Dove, as well as on the banks of the Great Ouse, in Bedfordshire. In 1845 he removed to Halifax, in Yorkshire, where he remained throughout the exciting period of the "Railway Mania," taking his full share in the terrible toils which that period involved. In the same office was an articulated pupil, Mr. Hirst, whose subsequent life was determined wholly by the example and influence of his truest friend.

Thus nearly five years of Mr. Tyndall's life were spent on the Ordnance Survey, and about three years more were connected with railways. Extreme caution and accuracy, together with dauntless perseverance under difficulties, characterized then, as now, the performance of every piece of work he took in hand. Habitually indeed he pushed verification beyond the limits of all ordinary prudence, and on returning from a hard day's work, he has been known to retrace his steps for miles, in order to assure himself of the security of some "bench-mark," upon whose permanence the accuracy of his levels depended. Previous to one of those unpostponable thirtieths of November, when all railway plans and sections had to be deposited at the Board of Works, a series of levels had to be completed near Keithly, in Yorkshire, and Manchester reached before midnight. The day was stormy beyond description; levelling staves snapped in twain before the violent gusts of wind; and level and leveller were in constant peril of being overturned by the force of the hurricane. Assistants grumbled "impossible," and were only shamed into submissive persistence by that stern resolution, which, before night-fall, triumphed over all obstacles.

In 1847, finding his railway-work unpromising, and still ani-

afterwards held possession of, and commanded at, Harper's Ferry. At Antietam nearly half his men were cut to pieces; he himself was carried, apparently dead, from the battle-field, and for his gallant behaviour on the occasion was made Brigadier-General.

mated by an irrepressible desire to augment his knowledge, Mr. Tyndall resigned his situation at Halifax, and changed his profession. He accepted an appointment as teacher at Queenwood College, in Hampshire,—a new institution, devoted partly to a junior school, and partly to the preliminary technical education of agriculturists and engineers. It was surrounded by 800 acres of land, upon which, besides farming, surveying, leveling, and other engineering operations were to be practically taught. As might be anticipated in a college thus constituted, cases of insubordination, especially amongst the older students, not unfrequently occurred. In such cases Mr. Tyndall, though inexperienced as a teacher, was invariably called upon to restore order. In doing so he did not trust to the harsh expedients behind which scholastic incompetence too frequently seeks refuge, but to the pure force of character. The ringleaders quailed before the “potential energy” stored up in their young tutor, convinced, doubtless, that this energy, once rendered “active,” would be more than sufficient to crush the most formidable resistance they were prepared to oppose.

An able resident chemist was also attached to the college, and in his laboratory Mr. Tyndall hoped to be able to turn his spare time to account. During part of his residence at Queenwood he renounced a portion of his small income, in order to secure additional time for the pursuit of his studies; but he soon longed for better opportunities than he could there command, and ultimately satisfied his longing in the following way:—The chemist just referred to was Mr., now Professor, Frankland, the well-known colleague of Professor Tyndall at the Royal Institution. In 1848 they quitted England together, and repaired to the University of Marburg, in Hesse Cassel. They were drawn thither by the fame of Professor Bunsen as a teacher, and to this eminent man Professor Tyndall owes the final determination of his career. Bunsen was celebrated not only as a chemist, but as a highly accomplished natural philosopher. Mr. Tyndall attended his lectures, and worked practically in his laboratory. The stores of the great master’s intellect, and the resources of his cabinets, were alike freely opened to the student, who was requested, in fact, to regard what the laboratory of Marburg contained as his own, and to make corresponding use of it. He worked hard, more through a sense of duty than through the hope of external recognition. Mr. Tyndall

has often gratefully mentioned to us the influence of Thomas Carlyle on this portion of his life.

In Marburg, he also attended the physical lectures of Professor Gerling, now dead, and of Professor Knoblauch, now of Halle, and likewise worked practically in their physical cabinets. He attended, too, the mathematical lectures of Professor Stegmann, and had also the advantage of private instruction from this excellent teacher. His first scientific paper was a mathematical essay on "Screw Surfaces," which formed the subject of his inaugural dissertation when he took his degree. But the investigation which first made him known to the scientific world was one "On the Magneto-Optic Properties of Crystals, and the Relation of Magnetism and Diamagnetism to Molecular Arrangement," which investigation, executed in connection with Professor Knoblauch, was published in the 'Philosophical Magazine' for 1850.

In 1851 Mr. Tyndall went to Berlin, and continued his researches on the newly-discovered force of diamagnetism and on the magnetic properties of crystals, in the laboratory of Professor Magnus. The apparatus of this distinguished physicist was placed generously at his disposal, while kindness, courtesy, and hospitality ever awaited him in the Professor's house. After making the acquaintance and securing the friendship of many eminent men in Berlin, Mr. Tyndall returned to London, where, during the same year, he first became personally known to Professor Faraday. It was about this time, too, that General Sabine, struck by the originality of his investigations, wrote to Mr. Tyndall, and offered to prepare the way towards his election as Fellow of the Royal Society; the election itself followed in 1852. Dr. Bence Jones, who first heard in Berlin of the existence of Mr. Tyndall, invited him, shortly afterwards, to give a Friday-evening discourse at the Royal Institution. The invitation was accepted, and the lecture, given on February 14th, 1853, was so successful that offers from various institutions immediately poured in upon the lecturer. His appointment in the Royal Institution was strongly urged by Dr. Bence Jones, and was also recommended by Mr. Faraday. The antecedents of this renowned institution, and the thought of being closely connected with that grand and simple soul whose labours alone would have immortalized any institution, at once decided Mr. Tyndall's choice; accordingly, he was unanimously elected, in June, 1853, to the appointment which he now holds, of Professor of Natural Philosophy.

The first three years of Mr. Tyndall's residence in London were devoted to an exhaustive investigation of diamagnetic polarity, and the general phenomena of the diamagnetic force,—magnecrystalline action included. In the *Philosophical Transactions* and *Philosophical Magazine* he published various memoirs on these subjects, all of which were received with considerable favour by the scientific world.

Very striking features of Mr. Tyndall's character are illustrated by his excursions in Switzerland, which country he first visited in 1849, for the sole objects of healthful relaxation and exercise. It was in 1856, and in the company of his friend Professor Huxley, that he first visited the Alps with an express scientific object,—the application of certain views regarding the cleavage of slate-rocks to the structure of glacier-ice. On their return, the two friends published joint papers on the structure and motion of glaciers. In 1857, Mr. Tyndall spent nearly six weeks at the Montanvert, and, assisted by his friend Mr. Hirst, made a complete investigation of the Mer de Glace and its tributaries. This investigation necessitated many perilous expeditions, all of which are described with remarkable vigour in the narrative-portion of Mr. Tyndall's work 'On the Glaciers of the Alps,' which was published in 1860. Towards the close of their six weeks' invigorating and instructive labours, the two friends, accompanied by a single guide, made their first ascent of Mont Blanc. After leaving the Grands Mulets, up to which point they were accompanied by Professor Huxley, the little party went astray; and it was only at the expiration of seventeen hours of excessively exhausting toil that they succeeded in reaching the summit, and regaining the ice-bound rock upon which their anxious friend had meanwhile been imprisoned. The year 1857 was devoted to the detailed investigation of a single glacier; but in 1858, wishing to render his knowledge more varied and general, Mr. Tyndall visited almost all the great glaciers of the Alps. This year he ascended the Finsteraarhorn with a single guide, and Monte Rosa, first with a single guide, and secondly alone. It was on the latter occasion that he was so nearly isolated from the world below, by the slipping away from him of his ice-axe.* The same year he made a second ascent of Mont Blanc, and in 1859 he again visited Chamouni, and spent, in company

* 'Glaciers of the Alps,' p. 157.

with Professor Frankland, a whole night upon the summit of the mountain, with a view to scientific observations. On Christmas night of this same year, we find him, hip-deep in snow, again at Chamouni; his object now being to make himself acquainted with the winter aspects and phenomena of glaciers. With great labour he succeeded in attaining his old quarters at the Montanvert, where he spent two days and two nights, and, before returning, determined accurately the winter motion of the glacier.

The scientific part of his 'Glaciers of the Alps' contains a full and lucid exposition of the origin and phenomena of glaciers. More complete investigations of isolated and contested points, relative to the structure and motion of glaciers and to the physical properties of ice, were published by Mr. Tyndall in the *Philosophical Transactions* of these years.

What he did in the way of climbing in the year 1860, in company with Mr. Vaughan Hawkins, is described by Mr. Hawkins and himself in 'Vacation Tourists' for that year; and in a letter to the 'Times' of 8th September, 1860, will be found a description of his visit to the scene of the well-remembered disaster on the Col du Géant. In 1861, he succeeded in reaching the hitherto untrodden summit of the Weisshorn, believed by competent judges to be the noblest mountain of the Alps. An account of his tour of that year is given in his extremely interesting and poetically thoughtful little book entitled 'Mountaineering in 1861.' In 1862 he made a second attack on the famous Matterhorn, the first being made, in the company of Mr. Hawkins, in 1860. This great obelisk is 14,800 feet high, and Mr. Tyndall and his guide reached a height of 14,600. Here, however, they were obliged to halt in presence of appalling precipices. In 1863 his climbing was limited to an ascent of the Jungfrau.

Mr. Tyndall's scientific researches have been numerous and varied, but his most important investigations are those which he has executed during the last five years, and the one in which he is now engaged. In his recent researches he devotes himself to the investigation of the molecular condition of matter; the grand problem to the solution of which Mr. Tyndall's inquiries have been hitherto mainly directed. He, for the most part, uses matter in its free condition as a gas or vapour, while *radiant heat* is the instrument he applies to its examination. Five memoirs on this most important subject have been already completed; three of

them are already published in the Philosophical Transactions, another is reported for publication, and the fifth, we understand, will be shortly handed in to the Royal Society.

The foregoing sketch, from the pen of one who knew him before he was known to the world, is but a meagre outline of Mr. Tyndall's eventful life.



THOMAS WOOLNER.

THOMAS WOOLNER, one of the most eminent of sculptors who have not yet obtained Academical honours, was born at Hadleigh, in Suffolk, in December, 1825. Educated in the school of that town, he was remarkable as a boy for that close and devoted observance of nature which has proved one of the leading characteristics of his works. By the age of thirteen, indications of a talent for sculpture were manifested, and he was placed in the studio of Mr. Behnes. Here Thomas Woolner studied with great industry for six years; and those who are familiar with the works of that distinguished sculptor, will not fail to discover in the works of his pupil how much he profited by his apprenticeship, especially in mastery over human form and in the power of expressing character. Mr. Behnes's abilities as a draughtsman were extraordinary, and he exercised his pupil in this essential branch of the art until he reached an almost similar point of accuracy. Like all young artists, Thomas Woolner designed many subjects that were not fated to advance beyond paper. These were chiefly of a poetical and historical character, and to this style belonged the first models which he produced:—'Eleanor sucking the poison from Prince Edward's wound,' exhibited in 1843; and a life-size group, 'The Death of Boadicea,' exhibited at Westminster Hall. Much attention was, we believe, excited by the Boadicea as a work of promise in the inventive, or, as it is also called, ideal style, in which English sculptors had been somewhat deficient. Figures of Puck, and of Titania with her Indian Boy, exhibited soon after at the British Institution, and an Eros and Euphrosyne, exhibited at the Royal Academy, strengthened the impression which the Boadicea had produced; and when, in 1854, Mr. Wool-

ner exhibited a marble statuette of 'Love,' he was considered by many to have taken a place among the number of poetical sculptors of whom Flaxman is the acknowledged chief.

Mr. Woolner, like many other sculptors of poetical aspiration, had, however, to turn his attention to portraiture. For the pursuit of this, Australia, to which place he went for two years in 1854, offered a wide patronage, and in Sydney and Melbourne he executed a number of likenesses, mainly in low relief. Mr. Wentworth and Sir Charles Nicholson, of Sydney, with Sir Charles Fitzroy and Mr. Latrobe, the Governors of New South Wales and of Victoria, were modelled by Mr. Woolner in medallion; in which style he has subsequently produced characteristic likenesses, amongst others, of Mr. Alfred Tennyson, Mr. Robert Browning, Sir Francis Palgrave, and Mr. Thomas Carlyle. On his return from Australia, Mr. Woolner's first important production was a life-size statue of Lord Bacon for the new museum at Oxford. In this statue, whilst the features and drapery have been as literally reproduced as the material allows, the conception of the figure, including the attitude and expression, is governed by a nice artistic feeling of the character and dignity of the subject. Mr. Woolner has also executed several busts of reputed excellence, among which may be mentioned those of Alfred Tennyson and Professor Sedgwick, in the Library of Trinity College, Cambridge; the latter of which, together with busts of similar quality of Wordsworth, Rajah Brooke, Mr. Maurice, and others, were shown in the International Exhibition. Posthumous busts, of great merit, of Professor Henslow, Archdeacon Hare, and Mr. Arthur H. Clough, are also due to Mr. Woolner's chisel, and he has in hand a likeness of Mr. Gladstone. Among works of eminence of an imaginative kind may be specially mentioned a group of two deaf and dumb children, in the International Exhibition, the sister supporting her younger brother, being full of truthful variety and poetic feeling. The artist has a group of somewhat similar character, a Mother teaching her Child his prayers, in hand for Sir Walter Trevelyan.

Mr. Woolner has also taken his share in that more strictly architectural sculpture which the revival of the Gothic style in England has introduced amongst us. He modelled, some years ago, four very characteristic figures, in relief, of Prophets and Apostles for Llandaff Cathedral, and a large series of statues have been commissioned from him for the new Assize Courts of Manchester,

including lawgivers, as Moses, Alfred, Edward I., and personifications of Justice, Mercy, and other similar subjects.

Of monumental works of importance which have not yet left Mr. Woolner's studio, we may mention the following:—a standing figure of Prince Albert, for Oxford; a bronze of Mr. Godley, the founder of Canterbury, New Zealand, destined for that settlement; a marble figure of Lord Macaulay, seated, for Trinity College, Cambridge; and a statue of William III. for the new Houses of Parliament.

We have spoken of Mr. Woolner as being essentially a poetical sculptor; we may now refer to the labours of his Muse as a poetical *littérateur*. About fourteen years ago he published some fragments of poetry in an obscure periodical, and these have been lately amplified into a volume of 170 pages, having for its title 'My Beautiful Lady.' Though published only in the autumn of last year, 'My Beautiful Lady' has already reached a second edition. The poem is thus characterized by an eminent critic:—"Mr. Woolner is, we believe, widely known as one of the very few first-rate sculptors of the day; his workmanship in marble shows uncommon truth, power, and directness of aim; and it is hence natural that similar qualities should be manifested in his poetry. 'My Beautiful Lady' has abundant warmth of colouring, and many landscape details touched with vivid power; but, as a whole, we should decidedly call it a statuesque poem. It has the unity which sculpture pre-eminently aims at. It is true that poetry of any high class is in itself an art, and one hardly less arduous in its requirements than sculpture. Finished verse is as much matter of sheer practice and study as finished painting. The poet must not only 'be born,' but, if we may hazard the phrase, be born again, through his own strenuous devotion to truth and music and beauty. It is not probable that the author has, in the case before us, been able to consecrate equal leisure to both arts; and his 'Beautiful Lady,' by some of those turns which show want of facility, may be ranked in that order of which English literature affords several remarkable specimens,—poetry, namely, written by men who, though not professionally poets, have manifested their possession of 'the vision and faculty divine' by signs unmistakable. Mr. Woolner's management of his lyrical metres, to which he has appropriately assigned the passionate portions of the drama, is peculiar. They

* 'Saturday Review,' Nov. 7, 1863.

move with an even, thoughtful pace, in harmony with the earnest purpose of the whole poem ; but, to our ear at least, they are overloaded with consonants, although carefully composed, and exhibiting unusual inventiveness in their rhythmical combinations. It is curious that this comparative want of ease and flow in the rhymed stanzas should be accompanied by a truly skilful and harmonious construction of what has ordinarily been the severest *cruæ* to English poets—the unrhymed ten-syllable verse. In this respect the narrative portions appear to us not inferior to Wordsworth in his best moments. The language is throughout terse and animated ; no words have been thrown away ; and here and there we find an abruptness and straightforward quality about the phraseology, not free from obscurity at first sight, which—though familiar enough to the readers of Pindar and Dante—is likely to shock the lovers of conventionality.”

A single stanza, taken at random, will suffice as a specimen :—

“ When crowding evils war to shake my faith
In righteousness, for thinking of Her life,
Made up of gracious acts and sweet regards,
Compassionately tender ; and enshrined
In such a form, that oft to my fond eyes
She seemed divine, and I could scarce withhold
My wonder, Heaven could spare Her to a world
So stained as ours. And now, whatever come
Of wrong and bitterness to break my strength ;
Whatever darkness fate may plunge me in ;
A ray has pierced me from the highest heaven—
I have believed in worth, and do believe.”



SAMUEL WARREN, Q.C., D.C.L., F.R.S.

SAMUEL WARREN, jurist, moralist, novelist, eldest son of the late Rev. Samuel Warren, LL.D., Rector of All Souls', Ancoats, Manchester, was born at Racre, Gresford, Denbighshire, on the 23rd of May, 1807. We learn from a note appended to his tale 'The Bracelets,' in a People's Edition of his writings published some ten years since, that this, nearly his first contribution to literature, which appeared in the January number of 'Blackwood's Magazine' for 1832, was composed "when the author was of very youthful age." And in the preface to that series of collected works, when the writer's established fame allowed him to speak of other circumstances in connection with his early productions, we are told that at the age of seventeen he had nearly completed, in secret, a work for the press, and wrote a letter to Sir Walter Scott to ask him how to set about publishing it. The answer of the then Unknown, dated, "Abbotsford, Aug. 3rd, 1823," is a curious record of the persistency with which he still laboured to preserve his *incognito*. "I am not the author," he said in his reply to the youthful aspirant, "of those novels which the world chooses to ascribe to me, and am therefore unworthy of the praises due to that individual, whoever he may prove to be. It is needless, therefore, to add that I cannot be useful to you in the way you propose. Indeed, if you will take my advice, you will seek no other person's judgment or countenance on the project of publishing which you entertain, than that of an intelligent bookseller who is in a good line in the trade."

At the close of 1827 we find Samuel Warren a student in the mathematical class of the University of Edinburgh, having already gained amongst other prizes that for English Verse in the Senior

Humanity Class, for his poem of 250 lines, 'The Martyr Patriots.' The fervour with which he admired the rough exterior and majestic form of Professor Wilson, when informed that he had concurred with Professor Pillans in awarding him the prize, may be readily imagined. "I never saw any man," said Mr. Warren in 'A Few Personal Recollections of Christopher North,' contributed some years ago to 'Blackwood's Magazine,' "who *looked* the man of genius he was, but Professor Wilson. Next to him was Sir Walter Scott."

Mr. Warren commenced to study medicine, and his literary taste developed itself from time to time during the next few years, from 1830 to 1836, in that remarkable series of papers in 'Blackwood's Magazine' entitled 'Passages from the Diary of a Late Physician.' On being reprinted in a separate form, the author gave his name in the title-page of the third volume. The emotions are excited in these fearful narratives—some of which are said to have been taken from actual life—to the highest degree, and the work has been largely read. "It has had a great circulation," says Mr. Warren in his preface to the latest edition, "both in the Old and New World, and passed into various languages, the last of which the author heard, being the *Bömissh*, or Bohemian." His famous novel of 'Ten Thousand a Year' followed, in which the author wrote "with a pen dipped freely and deeply into satire, but with no other object than to discriminate between virtue and vice, between sincerity and hypocrisy." Mr. Warren appears to have soon given up the study of medicine for the law, for having practised as a Pleader since 1831, in 1837 he was called to the Bar, and in the following year a paper made its appearance in 'Blackwood' with the title 'My First Circuit: Law and Facts from the North, in a Letter to Christopher North,' "given from my chambers on the 8th floor of No. 37, Fig-Tree Court in the Temple, on the 10th day of this present June, 1838." About this time appeared also some fugitive papers, among which may be mentioned 'Pegsworth, a Press-room Sketch,' and 'Calais; my Adventures, Pleasures, and Embarrassments,—thither, there, and back.'

From this period Mr. Warren's writings partook in great measure of a juridical cast. His mind, however, being still imbued with the fancy of the novelist and essayist, his contributions to the literature of the law had the merit of attracting and interest-

ing many more readers than is usual with such treatises. In 1835 appeared 'A Popular and Practical Introduction to Law Studies,' which, from a small duodecimo, became amplified, in the course of ten years, into two octavo volumes of sixteen hundred pages, published in July, 1863, with the comprehensive title—'A Popular and Practical Introduction to Law Studies, and to every Department of the Legal Profession.' A writer in the 'Quarterly Review' (July, 1836), taking the first edition of this manual as a theme for an article on Law Studies, introduced Mr. Warren's work with the following characteristic remarks:—"We have been drawn into these general observations upon the legal profession by the perusal of what proved to be a very entertaining book under a very unattractive title. This work, we frankly admit, had been lying before us, unopened, for some time, the title-page seeming to mark it out as scarcely within the limits of our critical jurisdiction: what had we to do with the pupillary state of counsel learned in the law? But being casually informed that the volume proceeded from a pen heretofore advantageously exercised on subjects of a far different description, we opened it, and found ourselves carried forward by a free, animated, and often picturesque style, till we had perused nearly the whole. The book is written with that utter frankness of disposition, and with some portion of that quaintness which is supposed to distinguish our older writers. There is a spice of Montaigne in its composition."

In 1852 Mr. Warren published, in two volumes, an elaborate treatise on 'Election Law,' which has ever since maintained its position as a standard work on that important subject. Four years previously, namely in 1848, contemporaneously with a treatise on 'The Moral, Social, and Professional Duties of Attornies,' had appeared his third and last novel, 'Now and Then.' Though described by a critic in the 'Times' as "a vindication in beautiful prose of the ways of God to man," followed by the reflection that "a grander moral is not to be found than that which dwells upon the reader's mind when the book is closed, conveyed, as it is, in language as masculine and eloquent as any the English tongue can furnish;" it was deemed inferior in interest, and was much less popular with the general reader than the author's previous novels. In 1851 Mr. Warren published a pamphlet which attracted considerable attention, and passed speedily through six editions, entitled, 'The Queen or the Pope? The Question considered in its

Political, Legal, and Religious Aspects, in a Letter to S. H. Walpole, Esq.;" and in the same year, the year of the Great Exhibition, appeared an imaginative apologue of the Crystal Palace, 'The Lily and the Bee.' The writer's object in this beautiful and impressive "Message of the Lily" and "Lesson of the Bee" was "to record the general impressions on his mind and heart from the transcendent and profoundly instructive spectacle of the Great Exhibition." Many mistook Mr. Warren's philosophical poem, written, as it was, in mystical and broken utterances, as emanating from an over-wrought fancy, but it was impossible to read without emotion the author's fervid expressions of intelligent wonder, warming frequently into reverent worship, present objects calling up rich trains of historic associations, lofty thoughts and generous feelings, in combination with graphic and glowing descriptions. The style of the Apologue is in great measure in imitation of a poem of King Alfred, a fragment of which is quoted, and in reference to which it is said in the preface, "much of what follows it has been humbly attempted to fashion on that exquisite model." In the following year 'The Lily and the Bee' was translated into Italian by Girolamo Volpe, under the title of 'Il Giglio e l'Ape,' and into German.

Among Mr. Warren's contributions to 'Blackwood's Magazine' may be mentioned an admirable memoir of Sir William Follett (January, 1846), and reviews of Alison's 'Life of the Duke of Marlborough' (February, 1852), of Mrs. Stowe's 'Uncle Tom's Cabin' (October, 1853), and of Townsend's 'Modern State Trials.' In reviewing this last work, Mr. Warren's taste for the morbid in medical and juridical literature had free scope, and separate articles appeared in 1850 and 1851 with the titles, 'Romance of Forgery,' 'Duelling,' and 'What's in a Name?' 'The Murdered Glasgow Cotton Spinner,' 'Trial of Daniel O'Connell,' etc.

Mr. Warren was appointed Queen's Counsel in 1851, Recorder of Hull in 1852, and a Master in Lunacy in 1859. From February 1856 to 1859 he sat in Parliament in the Conservative interest, as Member for Midhurst. In 1835 he was elected a Fellow of the Royal Society, and in 1853, on the Installation of the Earl of Derby, he became a D.C.L. of Oxford.



HUGH CUMING, F.L.S.

THE natural history of foreign seas and countries is abundantly studied by men who "live at home at ease" in the midst of cabinets and books, dependent for their specimens of birds, shells, or insects, on the stores of dealers in such objects; but the number of those who have undergone the arduous personal exertion of collecting them, with a scientific spirit, in their native haunts, is comparatively few. Of this small number the life and adventures of Mr. Hugh Cuming present one of the most remarkable instances on record. It is to the collecting of shells that Mr. Cuming has mainly directed his attention; and it is chiefly owing to the care with which he has noted the habits and geographical distribution of their molluscan inhabitants that the studies of the conchologist have come to possess an interest of a philosophic kind which was formerly unknown.

Hugh Cuming was born on the 14th of February, 1791, at West Alvington, Kingsbridge, Devon. In that richly-wooded county, where slugs and snails abound, he commenced at a very early period of his childhood to make a collection of their pretty shells. Kingsbridge was at that time the home of the celebrated author of the 'Testacea Britannica,' Colonel Montagu; and it was under his friendly patronage and encouragement that a taste for conchological pursuits was fostered in Hugh Cuming, until it became the ruling passion of his life. At the usual age he was bound apprentice to a sailmaker, and the selection of this business having brought him into contact with men of seafaring habits, he was induced, in 1819, to undertake a voyage to South America. Here he settled himself as a sailmaker at Valparaiso. Being thus transported into a country where the shells are of a much more

striking and beautiful character than any that he had seen before, Mr. Cuming's passion for collecting largely increased. He was especially delighted, on searching among the rocks, to observe the size and beauty of the Chitons and Fissurellas that inhabit that coast. The enthusiasm with which he exhibited his treasures to the people of Valparaiso excited a lively interest in his researches, and he was greatly befriended, amongst others, by the English Consul-General, Mr. Nugent, who introduced him to any officers of the Navy that happened to visit the port, and from whom he often obtained contributions to his shell cabinet.

In 1826 Mr. Cuming declined business, and determined upon undertaking an exploring expedition. With this object in view, he built himself a yacht, fitting it up expressly for the convenience of collecting and storing specimens of natural history, and in the following year he sailed for a cruise among the islands of South Polynesia. The first place he touched at was the little island of Juan Fernandez, and proceeding thence across the Pacific in the direction of the Society Islands, one of the next that he visited was Pitcairn's Island, memorable in history as an instance of an uninhabited island having become colonized by a fine athletic family of Christians, speaking English, descendants of the mutineers of the 'Bounty.' Five-and-thirty years had passed since the mutiny; and old John Adams, the good seaman, who had been pressed into it, still survived. Mr. Cuming found him nobly engaged in the pastoral and patriarchal offices so touchingly described by Captain Beechey, and having spent a week with him in his house, he continued his voyage, staying some time at Tahiti, where he became intimate with Queen Pomare.* The rich conchological novelties that now rewarded Mr. Cuming's toil in dredging,

* In 1815, when Captain Sir Thomas Staines touched at Pitcairn's Island in the 'Briton,' two of the natives were invited to dine with him in his cabin. They were tall, handsome youths, six feet high, with dark hair and open pleasing countenances, and having no clothes except a piece of cloth round the loins, and a straw hat ornamented with black cock's feathers, their fine form and muscular limbs showed to great advantage. On setting something to eat before them, these apparently half-savages suddenly clasped their hands together, and one of them, to the inexpressible astonishment of the Captain, repeated in solemn English the familiar words, "For what we are going to receive, the Lord make us truly thankful." They proved to be sons, by Tahiti mothers, of Christian and Young, two of the mutineers of the 'Bounty' nurtured in the fear and admonition of the Lord by old John Adams.

wading, and wandering, induced him to spend upwards of a twelvemonth among the various little-known islands of this wide expanse of ocean, especially the coral-reef islands, many of which had not been hitherto visited by any naturalist; and he reached home laden with spoils collected from sea and land.

On his return to Valparaiso, and after a few months spent in turning over the produce of his cruise, Mr. Cuming commenced preparations for a voyage of more extended duration along the western coast of South America. His eight years' residence at Valparaiso had allowed time for his researches in natural history to be widely known and respected, and he started on his second conchological expedition furnished with important advantages. The Chilian Government granted him the privilege of anchoring in the different ports free of the charges, and of purchasing stores free of duty. He was also supplied with letters to the authorities of the different States, who, in consequence, received him with marked attention, and on finding his pursuits entirely free from any political curiosity, rendered him every possible facility. At one port, and only one, along the whole line of coast from the Isle of Chiloe, in lat. 44° S., to the Gulf of Conchagua, in lat. 13° N., did Mr. Cuming experience any difficulty. On approaching Xipixapi, Ecuador, West Columbia, his little yacht, though carrying the Chilian flag, was taken for a Peruvian frigate. The Peruvians had rendered themselves obnoxious to the West Columbians by besieging the city of Guayaquil. Mr. Cuming was surrounded by an armed force, his papers were seized, and he himself was taken prisoner to the capital. He assured the Governor that his vessel was not so large as the twentieth part of a Peruvian frigate, and having given testimony of the harmlessness of his avocations, he was set at liberty, with many apologies for his capture.

After nearly two years spent in exploring the western coast of South America, dredging while under sail and at anchor in the bays and inlets, searching among the rocks, turning over the stones at low water, and rambling inland over the plains, riverbanks, and woods, Mr. Cuming returned with all his stores to England. It was in 1831 that the evening scientific meetings of the Zoological Society began to be enlivened by the brilliant displays of new shells, described from Mr. Cuming's cabinet by the late Mr. Broderip and the late Mr. G. B. Sowerby, while Professor Owen undertook the severer task of describing the anatomy

of some of the more interesting of the mollusks preserved in spirits.

In 1835, although Mr. Cuming's conchological novelties were far from being exhausted, he began to entertain the project, while in the fulness of health and strength, of visiting some of the islands of the Eastern hemisphere, and fixed upon the Philippine group as the field of his new researches. It happened that the Society to whose Transactions and Proceedings the results of his labours had so bountifully contributed, was presided over by a nobleman, Edward, thirteenth Earl of Derby, who took a substantial interest in the progress of zoological discovery, and himself employed collectors abroad for procuring specimens. The authorities of the Spanish Government were known to be exceedingly jealous of any foreigner approaching the Philippine Islands, but, through the influence of Lord Derby with the Spanish Ambassador in London, General Alava, Mr. Cuming obtained letters from Madrid to the Governor-General of Manilla, Don Andres Garcia Camba, and to the Minister of Finance, Don Luis Urrejola, who furnished him with letters to the governors of the different provinces into which the islands are divided, and gave certain necessary orders to the commandants of the gunboats placed at the different islands for their protection; whilst a letter from the Spanish Government, introducing Mr. Cuming to the Archbishop of Manilla, Don Francis José Segui, procured him a hospitable welcome among the clergy wherever he presented himself.

The importance of this mode of proceeding will be seen by the subsequent narrative. Although Mr. Cuming's dredgings and wanderings by the sea-shore were by no means inconsiderable, his attention was chiefly directed to the dense woods and forests of those luxuriant islands, which were suspected to be richly populated with snails. At every step of his progress he became the guest of the priests, whom he found living in comparative splendour. They placed their equipages at his service; and he travelled from town to town in handsome carriages, and from port to port in large boats, manned, some of them, with from thirty to forty oars. Everywhere a hospitable reception, with apartments and the best of living, followed, and the services of the school children, numbering in some places as many as four or five hundred, were secured to scour the woods for snail-shells. Nearly all the towns and villages of the Philippine Islands have public schools,

supported at the expense of the Spanish Government, and Mr. Cuming invariably succeeded in his intercession with the priest to get the scholars a holiday during his stay to help in collecting shells; and there was no want of rivalry among them, for their exertions were always liberally rewarded. Mr. Cuming generally managed to keep a little heap of silver coins in sight, and he distributed them to the shell-gatherers according to the measure of their contributions. Shells which gladdened his eyes day after day by their exceeding novelty and beauty were brought to him in quantities which seemed prodigious. Sometimes, when a stray specimen of a particular kind was observed among a multitude of others, the fortunate discoverer was rewarded with an extra coin, and off he would run again to the woods with the pattern specimen to search for further supplies; and others, catching sight of the bribe, would follow him, with the hope of gaining a similar reward. The natives, of course, thought the strange visitor was no more in possession of his reason in collecting such a quantity of snail-shells than was the demented Lear in gathering straws. At the island of Siquijor, where the priest's house was situated on an exposed elevation, in the middle of the town, Mr. Cuming could be seen through the open windows of his apartment busy sorting and packing. During the day-time, no particular interest was aroused, but when it grew dark, and Mr. Cuming was still seen with his assistants groping and flitting about with candles, his mysterious and apparently unappeasable restlessness excited some uneasiness; and the public authorities went in a body to the priest and demanded to know what sort of man he had got living with him. The Spaniards who came there, they said, always took money from them (the poll-tax); but this man gave them money, throwing it about like dirt. Mr. Cuming was frequently assailed with the inquiry, 'for what purpose did he collect such a quantity of shells?' It was in vain that he endeavoured to explain that they were to put in cabinets as specimens of natural history. The natives of the Philippine Islands are in the habit of making an ash of burnt shells to assist in chewing the betel-nut. They cut the nut into slices, and wrap them up, with the shell-ash, in leaves of the pepper-plant. And he resorted to the expedient of telling them that his shells were all destined for use in a similar process in England. This at once satisfied their inquiries. Wherever Mr. Cuming travelled, he exercised considerable influence over

the natives by practising as a medicine-man. He always carried a supply of quinine with him, and found it an unfailing remedy in the cure of fever. Hence he was everywhere feared and sought after, and his statements were listened to with the same respect for their sincerity as those of the priest.

After four years spent in this manner among the Philippine Islands, Mr. Cuming returned to England, and he has been untiringly engaged during the twenty-four years since elapsed in arranging and completing his collection, adding immensely to it by the purchase and exchange of specimens, and getting the species described and figured by conchologists at home and abroad. At present his cabinets contain not fewer than thirty thousand species and varieties, several specimens of each. The homage paid to Mr. Cuming by naturalists in all parts of the world, on account of his assiduity and enterprise in forming this wonderful collection, is quite remarkable; more especially on account of its containing the types of nearly all the numerous species described in this country during the last three-and-thirty years, the greater portion of which have been illustrated by Mr. G. B. Sowerby, Jun., in his 'Thesaurus Conchyliorum,' and in a more extended work of fourteen quarto volumes, with nineteen hundred plates, by the writer of this memoir.

It must not, however, be supposed that Mr. Cuming's researches have been confined to shells. During three excursions which he made in the Philippine Islands, starting each time from Manilla, he collected, in addition to shells, large numbers of birds, reptiles, and even quadrupeds, and an immense number of insects and plants. Of plants, he collected as many as 130,000 dried specimens for the herbarium, and a quantity of magnificent orchids, most of which, sent home alive in Ward's cases, proved to be new to the cultivator. The proceeds of Mr. Cuming's wanderings among the Philippine Islands filled 147 large cases, ninety of which he brought home with him to his house in Gower Street, in three large waggons. Mr. Cuming has disposed of his duplicate specimens to the various public and private collections of Europe and the United States, and takes pleasure in acknowledging that his expenses and labours have been amply repaid.





JULIUS BENEDICT.

JULIUS BENEDICT, the subject of this memoir, was born at Stuttgart, on the 27th November, 1805, and at a very early age gave such large indications of musical promise and proficiency, that he became, on reaching his ninth year, the pupil of Abeille for the pianoforte and harmony. Under this master he made the most rapid advances, and at thirteen years of age produced a *Cantata* of sufficient merit, on the occasion of the death of Queen Catherine of Würtemberg, to assure those who heard its performance of the brilliant career that was before him. His native town not furnishing him with sufficient opportunities for rapid advancement, he was induced, in 1820, to visit Munich, whence he proceeded to Weimar, where, placing himself under Hummel, he continued to avail himself for eight months of that celebrated *maestro's* tuition. Weimar, however, was much too contracted a locality for the development of the youthful musician's powers; he therefore speedily sought a larger sphere at Dresden, and became the pupil of Carl Maria von Weber, who accepted him simply on account of his talent, since that celebrated composer had hitherto refused to receive any *élèves* under his care, on account of the annoyance the drudgery of teaching occasions. The relation between master and pupil may be easily understood when it is said that Julius Benedict not only remained four years at Dresden, but accompanied Weber to Berlin and Vienna, witnessing the first performance (1818) of 'Der Freischütz' at the former, and the 'Euryanthe' (1823) at the latter capital. Impressed with a high consideration of his *protégé's* talent, and assured of his competency to undertake the highest duties of his profession, Weber procured for him, in 1825, the important post of Musical Director at Vienna, under Dupont, where the discharge of his duties was so efficient that he ex-

changed this situation for one of greater prominence at Naples, under Barbaja, where he filled the office of *Maestro al Cembalo* and Conductor both at the San Carlo and Fondo Theatres.

Although the demands of his position now drew largely upon his time, Julius Benedict found sufficient leisure for composition, and having already produced the music of two Ballets, 'Enea nel Lazio' and 'Le Minière de Beaujon,' besides a considerable number of vocal and pianoforte pieces, he brought out (1827) his first opera, 'Giacinta ed Ernesto,' the cast of which included Mlle. Unger, the Neapolitan *buffo* Casaccia, Fioravanti, and the celebrated Rubini. The success of this work was sufficient to induce him once more to devote himself to this range of musical creation, the result of which was another opera, 'I Portoghesi a Goa,' which, interpreted by Mlle. Adelaide Tosi, Winter, Benedetti, and Lablache, added considerably to his already established celebrity. The fame of the young *maestro* having now become established, he was induced, soon after the reception of his second effort, to make a tour through Italy, during which he gave concerts at Naples, Lucca, and Milan, and proved himself to be an accomplished pianist no less than as a brilliant composer.

From Italy, Julius Benedict was once more drawn towards the place of his birth, where the reputation he had legitimately earned from the most severe of musically critical countries, had already gained for him great renown, to be immediately enlarged upon the performance of his opera in German. From Stuttgart he once more wended his way to Dresden and Berlin, and having there won golden opinions from those who witnessed the fulfilment of their prognostications of his celebrity, he determined to spend the winter in Paris, making the progress of his art the chief occupation of his residence in that captivating city. In March, 1831, he returned to Naples, and not long afterwards had the good fortune to make the acquaintance of Mme. Malibran, who, with her usual appreciation of talent, at once foretold his future career, and set herself to assist him in achieving its advantageous results. By the inducement of this gifted *artiste*, he proceeded to Bologna in 1832, and visited England in 1835. Immediately on his arrival in London he took a position, his first concert, given on the 15th of July, being the most successful of the season of that year. On this occasion Meses. Malibran and Grisi assisted, and sang the celebrated duet from Mercadanti's 'Andronico' together. Although

his reception in London was all he could have desired, he was not induced immediately to fix his residence there, but, intending to return to Italy, he passed part of the winter of 1835-6 in Paris.

In the spring of 1836 a *buffo* opera was initiated at the Lyceum Theatre, and Julius Benedict was selected as *chef d'orchestre*, simply on account of the talent he had exhibited during the preceding summer. From London he set out again for Naples, where, soon after his arrival, an operetta, 'Un Anno ed un Giorno,' one of the most felicitous of his creations, was performed for the *début* of Signor Frederic Lablache, the worthy and estimable son of the great *basso profondo*. Returning to London in the winter of 1837, he brought this successful operetta with him, and gave it at the Lyceum Theatre, where he again occupied the position of Musical Composer and Conductor.

Having now established himself permanently in London, Julius Benedict commenced the arduous duties of his profession with his wonted energy; but, finding that no *maestro* can exist in our cold climate merely as a composer, he also devoted his attention to tuition. In spite of the tax upon his time and patience which tuition necessitated, he threw off no less than three operas between the years 1838 and 1846,—'The Gipsy's Warning,' 'The Bride of Venice,' and 'The Crusaders,'—the success of which has been quite as much of European as of English celebrity.

From 1844 to 1846, Julius Benedict occupied the post of Musical Composer at Covent Garden, first under the direction of Madame Vestris and Mr. Charles Mathews, and afterwards of Messrs. Charles Kemble and Bunn, and raised the character of that theatre by the taste, tact, and judgment he manifested in the management of the operatic department.

Amongst the great triennial musical *réunions*, that of Norwich has always held a prominent rank. It was, therefore, as high a compliment as could possibly be paid to Julius Benedict when the Committee requested him to undertake the distinguished office of conductor of the Festival of 1845,—a position he still continues to occupy, to the satisfaction of the Committee as well as for the advancement of art. In this year, notwithstanding the arduous nature of his numerous professional avocations, he made several journeys through the United Kingdom with the principal Italian vocalists, acting as pianist and conductor at a series of highly successful concerts. On the opening of the Philharmonic

Hall at Liverpool in 1849, Julius Benedict's acknowledged talent secured for him the direction of several grand concerts, by which the erection of that building was inaugurated.

In 1850 Julius Benedict accompanied Mme. Lind-Goldschmidt (then Jenny Lind) to the United States and Cuba, where he remained nearly twelve months, during which he conducted no less than 122 concerts in all the principal cities and towns of the American continent. On his return to Europe, severe domestic affliction befell him by the death of a son through an accident from the falling of the funnel of a steamboat on the Rhone, and speedily afterwards by the decease of his amiable and accomplished wife. Gradually, however, listening to the claims of his art, Julius Benedict proved to the world, in 1857, that he had lost none of his pristine talent, by the manner in which he wrote an overture and incidental music to the tragedy of 'Macbeth,' which was played at Her Majesty's Theatre on the occasion of the marriage of the Princess Royal with the Crown Prince of Prussia. From that period to the present he has been indefatigably prosecuting his labours, conducting, during the seasons of 1859 and 1860, Italian Operas at Drury Lane and Her Majesty's Theatres, conjointly with Signor Arditi. During this engagement he composed the recitatives and arranged Weber's 'Oberon' for the Italian stage, an adaptation which has deservedly won the highest encomiums. Amongst the more recent works by which he has increased his fame, the following may be especially mentioned:—'Undine' and 'Richard Cœur de Lion'—Cantatas written for the Norwich Festivals of 1860 and 1863; and the 'Lily of Killarney,' brought out at the Royal English Opera in 1862. He is also at the present time engaged upon the composition of a grand opera under the title of 'Esmeralda,' the libretto of which is founded upon Victor Hugo's celebrated novel. Amongst his unproduced and unpublished works are an operetta, just complete—'The Bride of Song;' a romantic opera—'The Minnesinger;' an oratorio—'St. Peter;' and many detailed and vocal pièces.

Julius Benedict is now a "naturalized" Englishman, and permanently resides in London, where he enjoys deservedly the good opinion of musicians, having won for himself the warmest friendships, both within and without the circle of a profession he has adorned by his works, and promoted by his assiduity.



THE RIGHT REV. THE BISHOP OF ST. DAVID'S.

THE name of this distinguished historian and eminent prelate will at once associate itself in the mind of the reader with the highest order of intellectual movement which has taken place during the last thirty or forty years, whether in the world of letters or of religious thought. His first introduction to the literary republic may indeed be placed at a far earlier date, and it is curious to mark, in this instance, a rare example of juvenile precocity sustaining its early promise, without failure, throughout a lifetime. In the year 1809 was published a small volume, entitled, "Primitiæ; or Essays and Poems on various subjects, religious, moral, and entertaining, by Connop Thirlwall, eleven years of age. Dedicated, by permission, to the Lord Bishop of Dromore. The preface by his father, the Rev. Thomas Thirlwall, M.A., Minister of Tavistock Chapel, Broad Court, Long Acre; Lecturer of St. Dunstan, Stepney, and Chaplain to the Lord Bishop of Dromore." The volume is a collection of productions, wonderful enough, considering the age of the writer, and contains a frontispiece, with a portrait of the youthful author before photography was dreamt of, announcing that he was born on the 11th of February, 1797. His father was then resident at Mile End, and afterwards became rector of Bower's Gifford, Essex. From the preface to this little work, we learn that he had learnt Latin at three years of age, and could read Greek at four with ease and fluency; and the result proves that these early signs of great ability were such as to warrant the indulgence of the highest anticipations on the part of his parents and friends.

From home he was sent to the Charterhouse, and thence to Trinity College, Cambridge. At the University he became Bell's

Scholar in 1815, and Craven Scholar in the same year. In 1818, he graduated as twenty-second Senior Optime, and First Chancellor's Medallist (the Classical Tripos not having been established till 1824). In the same year he became Fellow of Trinity, and was appointed Classical Examiner in 1828, 1829, 1832, and 1834. In 1824, he was called to the Bar at Lincoln's Inn, but withdrew from practice in 1828. From that date commenced Mr. Thirlwall's well-remembered career as Tutor at Trinity College, where he contributed as much as any one to found and promote the modern school of classical study for which that society is distinguished. A succession of scholars, from that time, treading in the footsteps and following the method of Thirlwall, have sustained the renown of the college, but to him mainly is due the honour of having struck out for it the path to eminence.

In 1831, an important work, the production of the joint labours of Julius Charles Hare and Connop Thirlwall, was given to the world. This was the translation of Niebuhr's 'History of Rome,' which produced a great and lasting effect upon English classical literature. This work was violently assailed by the 'Quarterly Review,' in an article which was replied to by the translators with a power of criticism and force of satire which gave a *quietus* to all such attempts for ever. Mr. Thirlwall also took part, with his friend Hare, in conducting the 'Cambridge Philological Museum.'

The publication, in 1835, of the first volume of the 'History of Greece,' made known to the world at large those powers and accomplishments, the observation of which had hitherto scarcely extended beyond the University. The medium by which this celebrated work was given to the public was, as everybody knows, Dr. Lardner's 'Cabinet Cyclopædia,' of which it forms by far the most important section. It is interesting to observe the terms in which, on the 12th of June, 1835, it was first announced. "The plan of the little work," it is stated, "begun in this volume has been considerably enlarged since it was first undertaken, and the author fears that a critical eye may be able to detect some traces of this variation from the original design in the manner of treating one or two subjects. He would be glad if he might believe that this was its only fault." The writer proceeds to state that there are two classes of readers to whom it is addressed, one, those who desire to have something more than a superficial knowledge of Greek history, but who possess neither the leisure nor the means

of studying the original sources ; the other, those who have access to the ancient authors, but who need an interpreter.

Mr. Thirlwall had doubtless been preceded, as he was followed, in his remarkable enterprise. He came upon the traces of Mitford, a writer, who, by his inaccuracy and partiality, roused not only the severity of the more accurate scholar, but the indignation of the more high-minded political partisan ; and every reader remembers what sharp stings of satire are to be found in the notes of Thirlwall's History, whether he is castigating the want of political honesty, or merely the bad scholarship of his predecessor. A few other writers come in for a share of this discipline ; and the general aim which seems to have animated the writer's studies and lent weight to his arm, may perhaps be gathered best from the following note to vol. iii. of the History, p. 6 :—The high authority which Boeckh has so well earned by his learning and candour, entitles even a passing, and perhaps hasty remark of his, to more attention than is due to all the attempts, which for the last forty years have been systematically made in our own literature,—the periodical as well as the more permanent,—for political and other purposes, to vilify the Athenians." The eight volumes were published at intervals down to the year 1844. It would be in vain here to point to the various remarkable features of a work, which has been so long before the public, and which is so necessary to the pursuits of the scholar.

A pamphlet which was published in the year 1833, in favour of the admission of Dissenters to some University privileges, led to the removal of Mr. Thirlwall from the Lectureship at Trinity College. In 1834 he was presented by Lord Brougham, then Chancellor, to the living of Kirby Underdale, Yorkshire ; and on the death of Dr. Jenkinson, he was, in the year 1840, elevated to the See of St. David's.

From that period the Bishop of St. David's has taken an active part in the deliberations of the House of Lords. His first vote was given on the 11th June, 1841, in favour of the Jews' Declaration Bill, a measure of relief of which he has always been the advocate. His speech on that occasion was an admirable specimen of reasoning, in dealing with the various objections to the measure which were most strongly presented, and coming from a Christian bishop, whose motives and principles were alike unimpeachable,

its effect was doubtless very great. Still, the consideration that the Bill would alter the Christian character of our institutions was too mighty to be got rid of for the present. In 1843, arose the question of the union of the Sees of St. Asaph and Bangor, and Lord Powis introduced a Bill for the purpose of preventing that union. The measure obtained the unflinching support of the Bishop of St. David's, although it was opposed by the Duke of Wellington and the Archbishop of Canterbury; but, notwithstanding the pleas that were strongly urged in favour of the interests of the Welsh people, the first Bill was withdrawn, and another in 1844 was decisively rejected. The result was the foundation of the See of Manchester. In the following year came the proposal, by Sir Robert Peel's government, for the endowment of Maynooth. The Bishop of St. David's speech in favour of the endowments is another instance of close and concentrated argument, amongst the whole train of which, perhaps, the most pointed question was the following:—"Will you do no good, because you cannot do pure and unmixed good?" These and similar reasons were ultimately successful in carrying the measure. As may be expected, the Religious Opinions Relief Bill, and the measures for the Repeal of the Corn Laws, found a supporter in the Bishop of St. David's. He spoke in favour of the measure introduced by the Marquis of Lansdowne, in February, 1848, for establishing diplomatic relations with Rome, and the speech is remarkable as containing laudatory expressions on the character of the Pope, whom he describes as "actuated by the very genius of good sense, and influenced by a spirit of the most exalted patriotism." How speedily this eulogium became a dead letter, and the grounds for congratulation on the good sense and patriotism of the Pope were dissipated by the political storms of 1848, it is needless to observe.

A more important proposal was that introduced by the late Bishop of London, in 1850, for transferring the jurisdiction in appeals from the Ecclesiastical Courts upon matters of doctrine from the Privy Council to a bench of fifteen bishops. In the debate on this vitally interesting measure, the speech of the Bishop of St. David's will again command our admiration for its wisdom and political foresight; we may add, also, its patriotism, when we remember that to speak against such a proposal required a thorough emancipation from episcopal prejudices. To the Marriages Bill,

on the other hand, Bishop Thirlwall has always been strongly opposed, and his judgment has been, in this matter, signally borne out by the deliberate voice of public opinion. So in the debate on the Ecclesiastical Titles Bill in 1851, the Rescript of the Pope was recognized by him to be not only an insult to the country, inasmuch as it ignored the established rights of the Church, but an injury, in that it violated the law of the land, and invaded the Queen's prerogative. In 1853, the Bill for enabling the Canadian Parliament to deal with the Clergy Reserves in that country was passed, and was aided in its progress by the Bishop, who considered that its rejection would be neither honourable nor safe, this being a matter of local domestic interest to the Canadian people. In the debates on the Divorce Bill in 1857, the Bishop of St. David's, though he did not formally oppose the measure, declared that he looked forward to its operation with "strong apprehension and much anxiety," feelings which experience has undoubtedly justified. He opposed Lord Shaftesbury's hasty measure for amending the Religious Worship Act, Lord Lyttelton's Subdivision of Dioceses Bill, and Lord Ebury's proposals for the Revision of the Liturgy. On the other hand, he supported the Church of England Special Services Bill, he voted in favour of amending the Act of Uniformity as to the "assent and consent" of the clergy to everything contained in the Prayer Book, and last year he recommended in Parliament the reference of the Burial Service Question to Convocation.

In the later religious movements of the day, the Bishop of St. David's has been frequently called upon to speak and act. In a series of triennial visitations to the clergy of his diocese, he has from time to time delivered charges, which discuss in his own masterly and philosophical style the questions which have stirred the Church and the religious mind of the country during the interval. Thus, the address in 1848 is directed in a great measure against 'The Theory of Development' of John Henry Newman. That in 1851 enters into a consideration of the case of *Gorham v. The Bishop of Exeter*, in which the Bishop found no ground for alarm as to innovation of doctrine in the sentence of the Judicial Committee. In 1854, the revival of Convocation was the subject brought before the clergy of the diocese, a project to which Bishop Thirlwall lent much support; and in the deliberations of that body since he has taken an active share. Three years later, a class of subjects, which

have since powerfully aroused the attention of clergy and laity, began to exhibit itself. Dr. Rowland Williams, the Vice-President of St. David's College, Lampeter, (of which the Bishop is the Visitor,) published a pamphlet, entitled 'Rational Godliness after the Mind of Christ, and the written Voices of His Church.' Inasmuch as this production appeared to some, in the language of the charge, "seriously to affect the supremacy and infallibility of Scripture as the Divine rule of faith and practice," its contents were formally brought before the notice of the Bishop by seventy clergymen of his diocese; and to this representation the more important passages of the charge are an answer. The Bishop declares, that whilst he should feel himself bound to resist to the utmost the introduction of error, he yet considers it to be no less a sacred and important duty "to respect and, as far as lies in me, to protect that freedom of thought, word, and action which the Church has hitherto granted to her ministers and members, and neither to make nor sanction an attempt to place it under any new restriction which she has not thought fit to impose." He proceeds to lay down that "no man is to be convicted of heresy on a construction of words which he may not himself admit;" and after referring to the belief which any one may entertain as to the doctrine of the plenary inspiration of Scripture, he adds: "When this individual consciousness is set up as the common measure of truth, to which all are required to conform under penalty of excommunication from Christian fellowship, it becomes an instrument of aggression on the rights of conscience, and an usurpation of the authority which belongs to the Church." He reminds his hearers finally that "the Church has pronounced no decision, laid down no definition on the subject." This memorial, and the reply which it called forth, are a very remarkable prelude to the astonishing agitation which was produced in 1860 by the publication of a volume of apparently anything but exciting materials,—the well-known 'Essays and Reviews.' This is a history which is familiar to every one of our readers, and it is only necessary to allude to it for the purpose of completing our narrative by mentioning those points on which the Bishop of St. David's has since declared himself. A writer in the 'Edinburgh Review,' in an article which appeared in April, 1861, had commented with some severity upon the proceedings of the Bishops, who, as will be remembered, in a private meeting held some short time before, had unanimously

agreed publicly to censure the work in question. When Convocation met in February, 1863, the Bishop of St. David's took occasion to remark that the strictures of the reviewer had proceeded, in some respects, upon a wrong assumption, viz. that certain extracts from the book which were appended to the names of the original subscribers had been before the Bishops when their names were affixed to the document. The Bishop declared that not one of the extracts was placed before them, and expressed his wonder at the reviewer's silence, to whom this error of fact had been long before communicated. This called forth a letter from the reviewer, which appeared in the 'Guardian' of February 25, 1863,—an important communication in many ways, not only as respects the Bishop, but as regards the history of the 'Essays and Reviews' movement. It then appeared that a correspondence had taken place between the Edinburgh Reviewer and the Bishop, in the course of which the former explained that the complaints of the 'Review' were directed, not to the fact of the Bishops' having selected certain passages on which to found their condemnation, but that they had left the public completely in the dark as to the grounds of their decision. The writer went on to say that he was glad to acknowledge his mistake in supposing that there was any abandonment of his Lordship's views as expressed in his introduction to Schleiermacher's essay; and, after hinting pretty broadly at the additional animosity which had been given to the conflicting parties in the agitation, by reason of the 'Episcopal Letter' of 1861, he appealed to the Bishop that he would continue to lend his powerful aid, "as in former times," to calm the popular agitation, and that he would deliver his "weighty judgment" in favour of the views now pronounced to be heretical.

The mention of Schleiermacher's essay was an allusion to the publication, in 1825, of 'A Critical Essay on the Gospel of St. Luke, by Dr. F. Schleiermacher, with an Introduction by the Translator.' The translator was long believed, and is now acknowledged, to have been Mr. Thirlwall, then a Fellow of Trinity College, Cambridge, and a layman, as the above-mentioned dates show. The importance of this introduction, which contains some expressions to the effect that the "verbal inspiration of Scripture had long been abandoned by the learned," and showing the distinctions that had been drawn between the "inspiration of suggestion" and the "inspiration of superintendency," is, under the cir-

cumstances we have pointed out, less than it might at first seem. The preface to the book is not by the translator, but by the writer of the essay.

In a reply to this letter in the 'Guardian' of the 4th of March, the Bishop acknowledges himself to have been the author of the introduction, and with reference to the subject of which it treats refers to his charge of 1857 as being the expression of his views on the subject, by which he wishes to abide.

On the more recent subject of the book of the Bishop of Natal, the views of the Bishop of St. David's will be best gathered from the charge delivered to his clergy at the visitation of 1863, in which the whole bearings of this question, considered in relation to the Church of England, are discussed.

Since then the decision of the Privy Council, in the case of Dr. Williams and Dr. Wilson, two of the Essayists, has been delivered, which in many respects alters the relations of the various parties.

It may be added, that Dr. Thirlwall is the author of many sermons, essays, and lectures on occasional subjects; that he has devoted much care and attention to the cause of education, in all its departments, and that in his diocese he will long be remembered as the first Bishop who for some centuries had ministered to Welsh congregations in their own language.



JOHN GOULD, F.R.S.

IN John Gould, the ornithologist, worthy successor of Bewick, Audubon, and Wilson, but far transcending them in the range and value of his researches, we have an interesting example of a self-taught lad of humble birth having raised himself to a high position as a scientific man by his own innate love of nature, indomitable zeal, and tasteful practical abilities. As in early youth he became a lover of birds from the charm exercised upon his senses by their tuneful notes, their brilliant plumage, and their instinctive habits, so in maturer years he was led by his artistic talent to make drawings of them, excelling in picturesque grouping and accuracy any hitherto produced, and by his love of field-sport to travel with his gun into newly explored lands for the acquisition of specimens by which to elucidate an important portion of the world's natural history.

Born at Lyme, in Dorsetshire, on the 14th of September, 1804, John Gould removed, with his parents, while yet an infant, to the neighbourhood of Guildford, Surrey; and it was on the wild commons and heaths of that district that at the early age of five to six years he ran about in search of flowers and insects. Soon he commenced to make collections of them, and at the age of bird-nesting to ramble in search of eggs, which he strung and hung around the cottage window. In 1818 John Gould's father obtained an appointment as foreman in the Royal Gardens of Windsor under Mr. J. T. Aiton, and having removed his family thither, young Gould now commenced the active business of life in the royal gardens. "I've gathered many a bunch of dandelions," we once heard the ornithologist remark, "for Queen Charlotte's German salads." Whatever John Gould put his hand to, he la-

boured at with the same determined zeal which characterized all his subsequent proceedings. After some years spent at Windsor, he was placed by Mr. Aiton under the care of Mr. Legge, gardener at Ripley Castle, Yorkshire, the seat of Sir William Ingleby, with the object of learning the higher branches of forcing; but his love of natural history predominated over all, and in 1827, he came to London and obtained the appointment, which then happened to be vacant, of Curator to the Zoological Society. This very interesting and flourishing institution had not been long established. Sir Stamford Raffles, one of its founders, was dead, but among the active members of its Council were one or two ardent lovers of ornithology, especially Mr. Vigors and Mr. Broderip; and the taste of its new Curator had therefore ample scope for encouragement, both in collecting new birds and in describing them at its evening scientific meetings.

Soon after joining the Zoological Society, at the outset of his scientific career, an event occurred in Mr. Gould's life which largely influenced the direction of his future pursuits. He married the daughter of Nicholas Coxen, Esq., of Kent, a lady of considerable accomplishments, especially in drawing, and in a very short time was projected Mr. Gould's first great ornithological work in imperial folio, 'A Century of Birds from the Himalaya Mountains,' of which the plates were drawn on stone, from the author's sketches, by Mrs. Gould. Mr. Gould now gave up his Curatorship of the Zoological Society, and devoted himself to the production of that magnificent series of works (all of imperial folio size) with which his name and fame are identified. During the next five years, from 1832 to 1837, Mr. and Mrs. Gould were occupied with 'The Birds of Europe.' The work was completed in five volumes, at the price of £76. 8s., and it is now out of print. Of Mr. Gould's next work, 'The Birds of Australia,' completed in 1848, in seven volumes, price £115, we shall speak more in detail.

The birds of Australia were much too little known to give Mr. Gould a hope of being able to publish any adequate illustration of the ornithology of that remarkable continent. He therefore determined upon making a personal investigation of them, and of their manners and habits, in a state of nature. Mr. and Mrs. Gould left England in May, 1838, and returned in 1840, having explored, during that period, Tasmania, the islands of Bass's Straits, South Australia, and New South Wales, penetrating the

last-named country to a distance of nearly four hundred miles from the coast line, while he dispatched his assistant, Mr. Gilbert, to explore the western and northern portions of the country. Mr. Gould's researches, he tells us in the preface to his great work, commenced immediately after passing the Equator, from whence, throughout the entire route to Australia, he lost no opportunity of studying the habits and collecting the different species of the oceanic birds that came under his notice. Of his collections formed on the Australian continent and adjacent islands, some idea may be gathered from an account of the circumstances which led to the destination of his typical specimens.

In 1848, after seven years of uninterrupted labour, Mr. Gould's work, 'The Birds of Australia,' was completed, and he was naturally anxious that the specimens therein figured, most of which were new, and of the utmost rarity and value, especially as being the original types of the species, should be preserved in the British Museum. They comprised examples of both sexes of nearly every known species of Australian bird, 1800 specimens in all, in various stages of plumage, each carefully labelled with its scientific name and the name of the place where killed; and they were, of course, mostly new to our national Museum. A sum of two thousand pounds having been spent in the expedition by which they were acquired, it was not to be expected that Mr. Gould could present them as a donation. He offered them to the Trustees for the moderate sum of £1000 in money, or as a gift if they would purchase twenty-five copies of his work. The offer was declined, and Mr. Gould was induced, under his disappointment, to accept £1000, immediately tendered for the collection by an American, for the Academy of Natural Sciences of Philadelphia.

Mr. Gould's joys in the accomplishment of this expedition to Australia and Tasmania were not, however, without a heavy balance of sorrows. Within one short year of his return Mrs. Gould, who had made an immense mass of drawings, both ornithological and botanical, suddenly died, and he lost at different times as many as three of his assistants; Mr. Gilbert, who went out a second time to explore the Swan River district, and was afterwards killed by the natives while making his way overland with Dr. Leichardt's party from Moreton Bay to Port Essington; Mr. Drummond, killed by one of the natives while seeking for specimens in Western Australia; and another attendant, accidentally

killed by the explosion of a gun while landing from a boat on one of the islands of Bass's Straits. Mrs. Gould's artistic labours have been since ably discharged by Mr. Richter, but her personal loss has proved irreparable, Mr. Gould not having married again. She left three sons and three daughters. The three sons, educated at college, each took their Bachelor's degree. The eldest, Dr. J. H. Gould, surgeon in the 2nd European regiment, unhappily died a short time since in Scinde; the second, Charles Gould, distinguished by eminent scientific attainments, holds the appointment of Geological Surveyor-General in Tasmania; the third, Franklin Gould, born at Government House, Hobart Town, the residence of Mr. Gould's attached friend, the lamented Sir John Franklin, who since perished in the Arctic regions, is destined for the medical profession.

The next subject in ornithology taken up by Mr. Gould was 'The Birds of Asia,' of which sixteen three-guinea parts are published, and nearly as many similar parts have been produced of a work on 'The Mammals of Australia.' Here Mr. Gould engaged with his characteristic vigour in a department of zoology that was entirely new to him. "It was not," he says in the preface to that work, "until I arrived in Australia, and found myself surrounded by objects as strange as if I had been transported to another planet, that I conceived the idea of devoting a portion of my attention to the mammalian class of its extraordinary fauna. The native black, while conducting me through the forest, or among the park-like trees of the open plains, would often point out the pricking of an opossum's nails on the bark of a *Eucalyptus* or other tree, and indicate by his actions that high up in yonder hole was sleeping an Opossum, or Flying *Petaurus*." Numerous species of kangaroos and opossums were nightly brought to their bush fires to be roasted and eaten by the natives; and when after a long and laborious day's work the party would encamp for the night by the side of a river, by a natural pond, or by a waterhole, Mr. Gould would stretch his weary body on the bank, and watch the little concentric circles on the water, formed by that remarkable intermediate link between quadruped and bird, the Duck-billed *Ornithorhynchus*.

While the works already noticed were in preparation, Mr. Gould found time to publish also one or two special monographs of particular groups of birds, all in the same splendid style of imperial

folio. In 1834 appeared his monograph of those curious large-billed birds, the Toucans; in 1838, one of the Trogons; and in 1850, one of the Partridges of America. His crowning triumph has, however, been a 'Monograph of the Humming Birds,' in which he succeeded, by means of a new process, in giving a very effective representation of the metallic lustre of the plumage. The production of this monograph in five magnificent volumes, of which the price is £78. 15s., affords another remarkable instance of Mr. Gould's enterprising assiduity and talent. The humming bird does not inhabit the eastern hemisphere, and Mr. Gould had been collecting specimens for twenty years without seeing it alive. The essential characteristic of all Mr. Gould's illustrations of birds is to give the species, male and female, with its natural mode of flight, its special nest, and the particular plant on which it loved to perch. The humming birds, some scarcely larger than our humble-bee, approach nearer to insect life in their habits than any other kind of bird. Some are possessed with the same marvellous powers of flight to enable them to sip the nectar of the flower while poised at the corolla's mouth, and the bills of different species are more or less lengthened according to the depth of the flower into which it dips for food. How was it possible to illustrate a monograph of the humming birds in the style which our ornithologist had made his own, from a contemplation of their stuffed skins! "In passing through this world," says Mr. Gould, "I have remarked that when inquirers of a strong will really set themselves to attain a definite object they generally accomplish it; and in my own case the time at length arrived when I was permitted to revel in the delight of seeing the humming birds in a state of nature, and to observe their habits in the woods and among the great flowering trees of the United States of America and in Canada." Mr. Gould did not visit the principal centre of habitation of the humming bird, the West Indies, Venezuela, and New Granada, but he attained his desire of bringing one of the only two species inhabiting North America (*Trochilus colubris*) alive to Europe. "For some time," he says in his monograph, "a single humming bird was my constant companion during days of toil by road and rail, and I ultimately succeeded in bringing a living pair within the confines of the British Islands, and a single individual to London, where it lived for two days, when, from the want of proper food or the change of climate, it died." Mr. Gould

had, however, by this time formed a wonderful collection of skins and mounted specimens. During the time of the Great Exhibition of 1851, he kindly gave the public an opportunity of seeing it in one of the houses in the gardens of the Zoological Society. At the present time this unrivalled collection, which now comprises about 400 species, is displayed in an elegant saloon at Mr. Gould's house, 26, Charlotte Street, Bedford Square, where it is at all times accessible to men of science, for the purposes of examination and comparison.

The price of a single copy of the grand series of works above enumerated is four hundred guineas. With how much persistent energy and industry must Mr. Gould have worked upon them during the five-and-thirty years occupied in their production ! Mr. Gould is essentially a sportsman, and nothing is allowed to stand in the way of his personally observing the facts necessary for the elucidation of their habits and geographical distribution. He is now engaged in illustrating 'The Birds of Great Britain' on the same grand scale ; and while his lithographer is transferring his drawing of a species to stone, he may be gone to Norway to study its mode of breeding, or to Malta to observe it on its passage.

Mr. Gould was elected a Fellow of the Royal Society in 1843 ; and he is an Honorary Member of numerous foreign and provincial societies.



THOMAS FAED, ESQ., A.R.A.

AMONGST the figure painters of the present day, there is one before whose works everybody stands to gaze and admire, be he or she old or young, gentle or simple. This favoured and favourite artist, who has a charm for all eyes, and whose compositions go straight to every heart, is Mr. Faed. Who is there who is not familiar with the humour, grave or gay, with which his works abound? and what critical judgment does not acknowledge, with sincerity, that in his hands there is always an elevating tendency, that the jocular element is never tainted with vulgarity, and that the homely and domestic is not without its touch of the sublime?

Something more than taste, however, is necessary to the success of a leading painter; and Mr. Faed's career is no exception to the rule, that only by long and arduous study is eminence in the arts to be achieved. He was born at Burley Mill, in the Stewartry of Kirkcudbright, in the year 1826. John, his elder brother, has been distinguished as a draughtsman and a painter at Edinburgh. Their father, who was an engineer and millwright, died in the year 1844, and Thomas, the subject of our memoir, thereupon, or shortly before, betook himself, at the suggestion of the elder brother, to the Scottish capital, where he ardently pursued the bent of his genius in the School of Design. Whilst there, he came under the notice and tuition of the celebrated Sir W. Allan, and his skill and industry were rewarded by numerous prizes in the annual competitions with his fellow pupils and scholars. It is related that his earliest exhibited work was a water-colour drawing from the 'Old English Baron;' but he soon abandoned this branch of art, and took to the higher domain of oil-painting, studying figures with unremitting assiduity.

In the year 1849, he was proficient enough to obtain the rank of Associate of the Royal Scottish Academy. Among the works exhibited in Scotland, that which is best recollected is a group representing 'Sir W. Scott and his Friends at Abbotsford.'

Still resident in Edinburgh, we find him, in the year 1850, exhibiting at the Royal Academy, with three works, 'Cottage Piety,' 'Auld Robin Gray,' and 'The First Step;' but in the next or following year, rising rapidly in public estimation, and finding his powers increase, he betook himself to London, and commenced a series of pictures which have been gradually but uninterruptedly successful. It is his good fortune to be the master of a class of subjects which are of all others most popular, and which, when multiplied by engraving, command an entrance to the hearths and homes of the million. Accordingly, not a work of social life or domestic incident makes its appearance, which is not at once submitted to the engraver, and so finds its way to circles which are perhaps closed to every other description of art production.

In 1852, a picture representing the 'Visit of a Patron and Patroness to a Village School' excited some attention. 'Sophia and Olivia,' in 1853, showed a good deal of experimental treatment in the lighting of the figures, but still was an advance; and a similar sparkling effect was attained in a subject exhibited in 1854, called 'Peggy,' from Ramsay's 'Gentle Shepherd.' In the following year, a still further progress in public esteem was achieved by the 'Mitherless Bairn,' where a simple tale is told in an obvious manner with much force and beauty. This has been engraved by Mr. Samuel Cousins, and is a great favourite.

It was in 1856, however, that the true scope and real extent of Mr. Faed's powers revealed themselves in two capital productions, which at once advanced him to the foremost ranks of the figure painters not members of the Academy. One of these was 'Home and the Homeless,' in which the contrast is presented between the interior of a thriving labourer's cottage, where the good man is coaxing his child with an apple, and the wan and abject figure of a beggar woman outside, whose hungry orphan child creeps up to the table. This is the picture that has been engraved by Henry Cousins. The other was 'Highland Mary,' one of Mr. Faed's most carefully-coloured and best finished works. This also has been engraved by W. H. Simmons, and is universally known and admired.

Next year came the scene, well known from Mr. T. L. Atkinson's engraving, the 'First Break in the Family.' The mail coach in the distance bears off the boy, the pride of the cottage family, from the old and young folks, who watch its departure with varied emotions.

In 1858 was exhibited a picture, in which the humour of the artist came out more powerfully than hitherto—"A Listener ne'er hears gude o' himsel'." The listener, it will be remembered, had written to his sweetheart a letter, "saft, couthie, and slee," and was now on the point of paying her a visit with the "brawest cheap shawl" he could find. He creeps to the doorway, and the scene which meets his gaze is best described in the words of the poet Ballantine, who wrote them on first beholding the picture:—

"There sat my braw Joe wi' young Colin Dalzell,
An' his glaiket sister, wha tongue's like a bell,
A gigglin, an' ettling my letter to spell—
A listener ne'er hears gude o' himsel'."

In this picture Mr. Faed displayed a more vigorous execution than before, stronger colour, and, above all, a keen dramatic zest, which infallibly asserted his artistic strength. This work has also been engraved by Mr. Atkinson. The 'Ayrshire Lassie' (since engraved by C. Tomkins) appeared also this year,—a fainter revival of the 'Highland Mary' of two years before.

Mr. Faed's picture in 1859 was 'Sunday in the Backwoods,' representing the devotions of Scotch emigrants in Canada under the roof of a grander kirk than any they had left behind them—the stems and vaults of the over-arching forest. This work has been engraved by Mr. Simmons. The painter was more at home in the genial picture, entitled 'My ain Fireside,' since engraved by Mr. J. Stevenson.

In 1860, the only exhibited work was a rare bit of Scottish humour, 'His only Pair,' suggested by some lines from Burns's 'Cotter's Saturday Night,' a picture which has been engraved by Mr. Simmons. This was followed on the next occasion by Mr. Faed's hitherto greatest work, 'From Dawn to Sunset.' He was now (1861) an Associate of the Royal Academy, and his first exhibition was worthy of his new honours.

The motto that accompanied this was, "So runs the round of life from hour to hour;" and the scene, it will be remembered,

displays infancy, youth, middle age, and decrepitude, in the circle of one family, reminding us of the Shakespearian cycle of the Seven Ages of Man. Clearly as the ideas were conceived, the execution was of the highest order that had yet been seen, the boldness not frittered away by over-finish and prettiness, and the light not too much broken up and scattered. It was universally felt to be one of the most successful specimens of figure painting that has appeared of late years. A masterly engraving of this, Mr. Faed's diploma picture, by Samuel Cousins, R.A., will appear in the Exhibition of the Royal Academy for the present year.

In the following year, there were two single figures, 'Kate Nickleby,' and 'A Flower from Paddy's Land,' showing the painter in a new light, as a student of flowers of the most delicately intricate forms and dazzling colour. 'New Wars to an Old Soldier' was a more elaborate group. A handsome country girl was seen leaning her elbow on the table, reading the news to her grandfather, on whose knee a child was perched, dressing up the old man's thumb in likeness of a red-coated soldier. The face and head of the old man were a marvellous example of exact and careful study. The details of furniture also were very curious and cleverly painted. Last year the pictures were, 'Train Up a Child,' etc. the 'Irish Orange Girl,' and the 'Silken Gown.' Mr. Faed's pictures sent to the Royal Academy for exhibition in the present year are a group of six figures, 'Baith Faither and Mither,' and 'Our Washing-Day,' with a single figure.

A small collection, but embracing some of the finest of the works above mentioned, and several others, among the rest, 'Conquered but not Subdued,' 'Daddie's Coming,' and 'Coming Events Cast their Shadows Before,' were to be seen some twelve months since at Messrs. Jennings's Rooms, Cheapside.

Mr. Faed can scarcely be said to have reached the height of his powers, and the future before him promises to be a brilliant one.



MAJOR-GENERAL SIR H. C. RAWLINSON,
K.C.B., D.C.L., F.R.S.

SIR Henry Creswicke Rawlinson, one of the most distinguished men among the many men of ability which the service of the East India Company has produced, was born at Chadlington, in the county of Oxford, the seat of his father, Abram Tyzack Rawlinson, Esq., in the year 1810. Mr. Rawlinson was famous in the county for his zeal in all field sports, and for his skill in rearing and training race-horses, with one of which, "Coronation," he won the Derby in the year 1841.

Sir Henry Rawlinson received the greater portion of his education at the well-known School of Ealing, near London, and from this he proceeded, at the early age of seventeen, to Bombay, where he served in the Bombay Grenadier Regiment till the year 1833. During this period few events occurred which gave him any prospect of distinguishing himself: however, besides passing an Interpreter's examination in Hindustani and Mahratta, he had time to perfect himself in the study of Persian, the knowledge of which proved of great value to him in his later career. It was, indeed, mainly in consequence of his remarkable proficiency in this language, that he obtained the appointment in 1833 which sent him for the six following years to Persia, nominally to train the Shah's army in European warfare and tactics, but with far more valuable results to science, in that his residence in Persia enabled him to commence and gradually perfect that wonderful interpretation of the Cuneiform inscriptions for which his name will ever live among historians and scholars.

He would seem during these years to have been fully occupied alike with his military and his philological studies, and to have resided chiefly at Kermanshah, though, at the same time, he was able,

as we know from various admirable reports he forwarded to the Government of the day, to travel over nearly all the western provinces of Persia, and to make minute and valuable researches into their past and present geography.

At the end of 1838, in consequence of the rupture of diplomatic relations between the British and the Persian Governments, he was compelled to retire to Baghdad, where he occupied himself in arranging for publication the materials that he had collected during his six years' service in Persia. He was not, however, long permitted to remain in lettered seclusion at that city. War had broken out between the Indian Government and the Afghan Empire, and Sir John Keane had been sent across the Indus with the mad object of forcing upon an unwilling people a ruler whom they detested and had once already rejected. Under these circumstances, and just as he had completed for publication his first essay on the decipherment of the Cuneiform texts from Behistun, Sir Henry (then Major) Rawlinson was recalled from Baghdad to India, and placed under the orders of the Envoy at Cabul. In the spring of 1840 he travelled from Bombay to Cabul, and on his arrival at the Afghan capital was appointed joint Envoy with Arthur Conolly, to visit the Uzbek Courts of Khiva and Kokan.

Before the mission, however, started, the state of Western Afghanistan induced Sir W. Macnaghten to order Major Rawlinson to that quarter. In the summer of 1840, the lamented Conolly set out on his fatal journey alone, and Major Rawlinson took up his abode at Candahar as Political Agent for Western Afghanistan. He remained in this post for more than two years, and did not return to India till the end of 1842, when the successes of the armies under Sir W. Nott and Sir George Pollock had retrieved in some degree the disasters the English had suffered at Cabul under General Elphinstone.

He now remained for a year in India, settling the accounts of the Candahar force, at the expiration of which time he was appointed by Lord Ellenborough to the Political Agency of Turkish Arabia, as a reward for his Afghan services. Arriving at Baghdad in December, 1833, he received shortly afterwards, in March, 1844, his commission as H.B.M. Consul. In 1850, he obtained the local rank of Lieutenant-Colonel in Turkey; and in 1851 he became Consul-General. In this position, he remained at Baghdad,

with the exception of a brief visit to England, the first he had made after twenty-two years of incessant service in the East, till 1855, when he finally left Baghdad, and, resigning his post, settled in England. Shortly after this he was appointed a Crown Director of the East India Company, and subsequently formed one of the Council of India, resigning, at the same time, his seat in the House of Commons, where he served for one session as M.P. for Reigate.

In April, 1859, on the retirement of Mr. Murray, he was sent, at the direct instance of the Queen, as Envoy Extraordinary and Minister Plenipotentiary to the Court of Teheran, with the local rank of Major-General, and remained in this appointment till June, 1861, when he returned to England. Sir Henry Rawlinson has received many honours, both for his public and his literary services. He is a Military C.B. (1844), and a Civil K.C.B. (1856); a K.L.S. and K.D. for services in Persia and Afghanistan; also a Chevalier of the "Order of Merit" of Prussia. In England he is an F.R.S., D.C.L. of Oxford, and LL.D. of Cambridge, also Director of the Royal Asiatic Society, and Vice-President both of the Royal Geographical Society and Royal Society of Literature, and a Fellow of numerous other societies besides. Abroad he is a Corresponding Member of the Institute of France, and he has received diplomas from the Academies of Munich, Pesth, Amsterdam, and Cambridge in America, and also from the Oriental and Geographical Societies of Berlin and Leipsic.

It is certain that Sir Henry Rawlinson will be best known to posterity, as a military man, for his memorable defence of Kandahar,—and as a scholar, for his complete deciphering, first of the Persian branch, and ultimately of the Assyrian class of the Cuneiform inscriptions. We shall therefore say a few words now on each of these subjects.

We have stated that in June, 1840, Sir Henry Rawlinson was sent from Cabul to undertake the responsible post of Political Agent at Candahar to the Anglo-Indian army under Sir W. Nott. The times were most critical. Since the famous entry of Shah Shujah into that city, in April, 1839, escorted by Sir John Keane's army, the English had stormed and taken Ghaznee, and, advancing to Cabul, had placed the Shah on his throne: a short breathing-time had occurred, till at length the outbreak commenced at

Cabul on November 1st, 1841, and ended, as is well known, in the entire destruction of all the English troops that had assembled around the capital of the Afghan Shah.

The news of this event did not reach General Nott at Candahar immediately, but the tribes around that town were at once observed to be in a state of great disturbance, and a detached force under Colonel Maclaren, which had marched from Candahar southwards towards India on November 7th, was promptly recalled for the defence of the place on the advice of Major Rawlinson ; and it appeared that this step was taken not a day too soon, as accounts soon after arrived of the insurrection at Cabul, with bad tidings from Colonel Palmer at Ghaznee and Major Leech at Kelat-i-Ghilgi, showing clearly enough that the whole intervening country was up in arms. Major Rawlinson was now for some time engaged in attempting negotiations with the different chiefs of the neighbourhood, or in sowing seeds of disunion among them. Neither plan, however, fully succeeded, and he at length resolved on one of the boldest steps ever taken by an officer supported by so small a force (probably not more than from 4000 to 5000 serviceable troops), viz. the compulsory expulsion from a town numbering some 80,000 to 100,000 people, of all the Afghan and therefore disaffected families. After long pondering over this step, Rawlinson finally executed it on the 3rd of March, 1842, and compelled some 6000 persons to depart at a moment's notice,—a measure no doubt involving much suffering and some injustice, but absolutely necessary under the circumstances in which the handful of English troops under Nott and Rawlinson found themselves. It is right to add, that in all his plans, Rawlinson was on the whole well supported by General Nott, though the letters of the General show plainly enough that he had little sympathy with, and no belief in "Politicals."

The 10th of March and the night following were probably the most trying of Rawlinson's life. After the clearing of the city, General Nott marched out with nearly his whole force to attack the Afghans without the walls. As he advanced, they fell back, making, however, a feint to fight. When they had enticed the unwary General far enough, the bulk of them doubling upon him fell back upon the city, which they attacked with the utmost fury till midnight of that day. The enemy were, however, completely baffled by the determined courage of Colonel Lane and Major

Rawlinson, who resisted all their attempts, step by step,—blocking up the burning Herât gate with bags of corn, or pouring into them volleys and volleys of musketry, which told with dreadful effect upon their crowded and ill-disciplined host. On the 12th Nott returned, and from this time Candahar was safe. It however owed this safety wholly to the pluck of Rawlinson and Lane, for the General had been clearly out-manceuvred by the Afghan chiefs, and mainly by one Mirza Ahmed. Rawlinson remained at Candahar till the final advance of the army to which he was attached, resisting, in perfect harmony with General Nott, successive orders, first from General Elphinstone at Cabul, and, latterly, from the new and vacillating Governor-General, Lord Ellenborough, to give up Candahar and fall back either to Cabul or India. There can be no doubt that their firmness saved the army entrusted to them, and enabled it in the autumn of 1842 to march *viâ* Kelat-i-Ghilgi and Ghaznee, and thus to make its celebrated junction at Cabul with the army under Sir George Pollock, who had come by the famous passes from Jelalabad. During the whole of this period Major Rawlinson's services were of the highest value, as is clear from the luminous dispatches which he, on several occasions, transmitted to the authorities; nay, more than this, it is not too much to say that, in spite of General Nott's horror of "Politicals," he would have been much less successful had he not had the constant practical advice of a man so thoroughly acquainted with the natives as his Political Agent happened to be.

On the second head, our debt to Sir Henry Rawlinson, as one of the first Oriental scholars of the day, may be said to commence from the time when, at his solitary post near Kermanshah, in Persia, he first seriously devoted himself to the interpretation of the famous trilingual inscription, in Persian, Babylonian, and Median Cuneiform writing, still existing on the face of the mountain of Behistun.

We gather from his famous Memoir in the Tenth Volume of the 'Asiatic Journal,' that he commenced his researches in 1835, by an analysis of certain sculptured tablets at Hamadan; that by the end of 1837 he had copied and deciphered the principal paragraphs on the Behistun monument, and that during that winter he forwarded to London the translation of the first two paragraphs, which contain the titles and genealogy of Darius, the son of

Hystaspes. During 1838, and the early part of 1839, he was still engaged on the same work, the latter portion of the time, while resident at Baghdad, enabling him to finish his first memoir on the subject. Finding, however, that during his long absence in the East, in localities where books were not to be procured, many valuable papers, especially those by Burnouf and Lassen, had been published in Europe, he resolved entirely to recast his Memoir, and was engaged in this task when, as we have seen, he was recalled from Baghdad to India, and was therefore not able to resume it again for three years. Ultimately, the Memoir was published, with facsimiles of the inscriptions, in 1846, nine years after it was first sketched out. Since that period Sir Henry Rawlinson has worked with great assiduity at the Cuneiform inscriptions, the study of the first branch, the Persian, having led to the complete development of the far more difficult Assyrian. With this view he has been for several years engaged with Mr. Norris in the publication of the extensive collection of Assyrian texts preserved in the British Museum, one volume of which, in folio, was published in the year 1861, another being now nearly ready for the press. Shortly, too, after his first return to England, in 1850, he assisted in editing a portion of the volume of inscriptions collected by Mr. Layard during his travels.

Sir Henry Rawlinson has been an active contributor of most valuable papers to some of the best journals in England. Thus, to the early volumes of the Geographical Society he has contributed, during the period he was resident in Persia, three valuable papers:—1. On a march from Zohab along the mountains of Zagros to Khuzistan. 2. A journey from Tabriz through Persian Kurdistan to Takht-i-Suleiman, etc. 3. A memoir on the Atropatenian Ecbatana; and, more recently, Notes on the Ancient Geography of Mohammerah and its Vicinity, and a letter on the Comparative Geography of Afghanistan. Of these, the Memoir on the Atropatenian Ecbatana is perhaps the most remarkable paper, for the extraordinary amount of classical and Oriental learning it contains, that has ever been published in the journal of any society.

To the Society of Antiquaries Sir Henry Rawlinson has given a short paper on the Sculptured Rock of Behistun, published in 1850; and to the Royal Society of Literature a very interesting

one on the illustrations of Egyptian History and Antiquities from Cuneiform Inscriptions, published in the Seventh Volume of their Transactions (1862). To the Asiatic Society of London he has given the entire Tenth Volume, to which we have more than once alluded, as containing the complete working out of the problem of the interpretation of the Persian Cuneiform inscriptions; a Vocabulary of the ancient Persian language, and an Analysis of the Babylonian Inscriptions at Behistun, together with a Memoir on the Babylonian Inscriptions, which have not been completed, chiefly owing to the pressure of more important work; a general account of the inscriptions of Assyria and Babylonia, and especially of the Nimrod Obelisk, the substance of two oral addresses made by him to the Society on January 19 and February 16, 1850; 'Outlines on Assyrian History,' 1852. 'Early History of Babylonia,' 1854. 'On the Birs-i-Nimrud, or Great Temple at Borsippa,' 1855; and 'The Orthography of some of the Later Royal Names of Assyrian and Babylonian History,' 1855. In all of these the student will perceive the same wonderful power of grasping and dealing with details, which he will observe in his great paper on the Atropatenian Ecbatana. Sir Henry Rawlinson has, too, supplied his brother's translation of Herodotus with a vast number of valuable notes, and with some most learned and comprehensive essays upon various topics of Assyrian history.

It could hardly be that any one dealing with topics so difficult and subjects so abstruse should not have met with many opponents, not a few disbelievers, and some jealous and ill-tempered detractors. To them he may well quote the words of M. de Longpérier, himself better qualified than most men to give an opinion on the subject: "Jamais il nous trouvera dans le rang de ceux qui dénigrent les travaux philologiques, et nous serons heureux de pouvoir bientôt faire part aux antiquaires de notre pays des perfectionnemens et des progrès sur lesquels l'incontestable érudition de M. Rawlinson nous donne le droit de compter." (*Revue Archéol.*, Nov. 1850.)

The public is but imperfectly acquainted with the circumstances under which Sir Henry Rawlinson relinquished his honourable and lucrative post as Her Majesty's Minister in Persia, and retired into private life in England; but we have reason to think that it occurred as follows. Sir Henry undertook the duty as an Indian

officer under the Secretary of State for India, and with the full understanding that his mission was to be conducted on the same liberal footing, and subject to the same general policy, as the other Eastern missions upon which he had served. Shortly after his arrival, however, in Persia, he found the mission summarily transferred to the Foreign Office. His liberty of action was at once curtailed; his hands fettered with "red tape;" and his dealings with the Shah placed, as he termed it, "under the strait-waistcoat of European diplomacy." Believing it to be impossible to consolidate relations between the British and Persian Governments under such conditions, and feeling, moreover, that faith had not been kept with him, he resigned his post and returned to England; but it is a matter of notoriety that, during his brief tenure of the office of Minister at Teheran, he acquired a degree of personal influence both with the Shah and his Court that has never been attained by any other European since the days of Malcolm. Sir Henry's qualifications, indeed, as a diplomatist are not inferior to his claims as a military man or as a scholar. Among the many papers which he has drawn up on public affairs, we may refer to an article on our "Political Relations with Persia," in the 'Calcutta Review' for 1849; a pamphlet on the "Overland Telegraph to India," published by J. Murray in 1862; and very pointed speeches on the "Transfer of the Government of India to the Crown;" on the "Career of Sir James Outram," etc. etc.



W. B. CARPENTER, M.D., F.R.S., F.L.S., F.G.S.,

REGISTRAR OF THE UNIVERSITY OF LONDON.

DR. WILLIAM BENJAMIN CARPENTER is the eldest son of the late Dr. Lant Carpenter, a dissenting minister highly esteemed for the philanthropy of his character and his success in education, though more widely known as an able writer on theological subjects: and is the brother of Miss Mary Carpenter, whose labours in the cause of juvenile reformation have gained for her a most honourable distinction. He was born in Exeter, on the 29th of October, 1813; but his family having removed to Bristol in 1817, the latter city became his home during his youth and early manhood. He received his general education entirely under his father's roof, where he enjoyed the advantage not merely of an excellent training in the ordinary branches of school study, but also of sound elementary instruction in physics and chemistry. His own tastes took so strongly the direction of science, as to lead him earnestly to desire to prepare himself for the profession of a civil engineer; but the development of the railway system having at that time scarcely commenced, no opening seemed to present itself in the line of his choice; and he was induced by the wishes of his family to accept an offer made by his father's intimate friend Mr. J. B. Estlin (a general practitioner of high standing in Bristol, and brother-in-law of Dr. Prichard) to receive him as his pupil, and to prepare him for the medical profession. He commenced his apprenticeship to that gentleman in 1828; and during the latter part of it attended lectures at the Bristol Medical School, and hospital practice at the Bristol Infirmary. His scientific tastes also were cultivated by the opportunity he enjoyed of attending the excellent courses of lectures delivered at that period in the Bristol Philosophical and Literary Institution: his obligations to which, for the

advantages he derived from it during the earlier part of his student-life, he has taken many opportunities of publicly acknowledging. In the winter of 1832, he was requested to accompany Mr. Estlin, the state of whose health made it desirable for him to have recourse for a time to a warm climate, to the West Indies ; and with him he resided for four months on a sugar-estate, in the beautiful island of St. Vincent, also visiting Grenada.

On his return home, he resumed his professional studies at the Bristol Infirmary and Medical School, and thence proceeded to London in the autumn of 1834, attending lectures at University College, and medical and surgical practice at the Middlesex Hospital, where he acted for a time as clinical clerk to Dr. Watson. In addition to the ordinary curriculum of professional study, he entered to the course delivered by Dr. Grant, on Comparative Anatomy ; from which he carried away not only a large amount of valuable information, but also an earnest love of the subject, as one to which his special attention should be directed if opportunity should serve. In the autumn of 1835 he passed his examinations at the College of Surgeons and Apothecaries' Hall, and then proceeded to Edinburgh, where he devoted himself in the first instance to the study of Physiology under Dr Alison, and of Materia Medica under Dr. Christison, and also to that of Clinical Medicine in the Royal Infirmary, where he was clinical clerk under Professors Alison, Christison, and Traill. He also joined the Royal Medical Society, of which he became an active member ; and he there formed intimacies with several young men of his own or more advanced standing, who have since risen to distinction. Returning to Edinburgh in the ensuing session, he was elected the first of the four annual Presidents of the Society ; and in that capacity delivered the Oration at its Centenary Commemoration, February 17, 1837.

Having been offered the Lectureship on Medical Jurisprudence in the Bristol Medical School, and having determined to enter upon general practice in Bristol, he did not remain at Edinburgh during the third winter which would then have been required for graduation ; but delivered his first course of lectures in the summer session of 1837, and applied himself to the practice of his profession, with the intention of devoting his leisure hours to the scientific pursuits in which he felt a stronger interest. A paper which

he had read at the Royal Medical Society of Edinburgh, "On the Voluntary and Instinctive Actions of Living Beings," and which contained the germ of much that he subsequently developed in his writings on the physiology of the nervous system, had been already published in the 'Edinb. Med. and Surg. Journal;' and in July, 1837, appeared the first of his contributions (an article on Vegetable Physiology) to the 'British and Foreign Medical Review,' then edited by Drs. Forbes and Conolly. In the same year he became a competitor for the "Students' Prize," subscribed for by the students, and adjudged by certain of the Professors, of the University of Edinburgh; the subject being one proposed by Professor Alison, "On the difference of the Laws regulating Vital and Physical Phenomena." His essay proving the successful one, he appropriated the prize (£30) to the purchase of a Microscope; and from that time microscopic research became a leading object of his pursuit. The principal part of his prize essay was published in the 'Edinburgh New Philosophical Journal,' for April, 1838. The 'British and Foreign Medical Review,' of the same date, contained two elaborate articles from his pen: one of them, entitled "Physiology an Inductive Science," being a critique on the portion of Dr. Whewell's 'History of the Inductive Sciences' which relates to that subject; whilst the other, "On the Physiology of the Spinal Marrow," discusses very fully the doctrine of reflex action, then recently propounded as new by Dr. Marshall Hall. This last essay, though vehemently complained of by Dr. M. Hall as not doing justice to his merits, has been generally accepted by competent judges as a fair statement of the aspect which the question presented at that date, and as having placed the discussion of it upon a broader basis, as regards both the general doctrines of neuro-physiology and the history of those doctrines, than that to which Dr. M. Hall had himself been disposed to restrict it.

The subject of our biography was at this time applying himself to the execution of a design which had gradually matured itself in his mind—the production of a treatise on "General and Comparative Physiology," intended as an introduction to the study of human physiology, and as a guide to the philosophical pursuit of natural history; of which the first edition was published at the end of 1838. The novelty of its plan, and the general merits of its execution, obtained for this work a more favourable reception than

might have been justified by a severe scrutiny ; the author's knowledge having been drawn rather from books than from nature, and his power seeming rather to be that of systematizing the facts collected by others, than of adding to the store by original research. As a training and discipline to his own mind, the course of study which he went through in its production was most valuable to him ; and he has had reason to believe that even in its original crudity, the work was of service in giving a scientific direction to the studies of others. But the reputation which it gained for him was rather injurious than beneficial in regard to his prospect of success in practice, and did not, at the time, appear to open the way for him to any other means of maintaining himself.

Some alterations in the regulations of the University of Edinburgh having enabled him to graduate by three months' additional residence, he proceeded thither early in 1839, and took his M.D. degree in that year ; sending in as his Thesis a dissertation which he had previously read at the Royal Medical Society, "On the Physiological Inferences to be deduced from the Structure of the Nervous System of Invertebrated Animals." In this thesis, which obtained for its author one of the four gold medals then annually adjudged by the Senatus to the best productions of the kind, he applied the doctrines of reflex action to the nervous systems of Articulated and Molluscous animals, basing this application, however, not upon any original results either of anatomical or of experimental inquiry, but upon the facts of both kinds which had been already determined. These he showed to be inconsistent with the doctrines in regard to the functions of the gangliated cord in Insects, etc., which had, up to that time, been taught by Grant and Newport, on the basis of Sir C. Bell's views of the endowments of the different columns of the spinal cord in Vertebrata ; and to be only explicable on the idea of each ganglion being an independent centre of reflex action for the organs supplied by itself, the actions of the whole series of ganglia being co-ordinated by the directing agency of the cephalic ganglia conveyed by the fibrous strands proceeding from them. The views thus advocated were at once adopted by Professor Owen and several other eminent physiologists, though opposed in the first instance by Mr. Newport ; the subsequent inquiries of that excellent investigator, however, satisfied him of the correctness of Dr. Carpenter's doc-

trine, which was fully adopted by him in a memoir published in the Philosophical Transactions for 1843; and since that time it has passed into general acceptance.

In the course of the next year Dr. Carpenter made up his mind to devote himself to the cultivation of Physiological Science, and to seek his livelihood in lecturing, private teaching, and the use of his pen, rather than undertake the responsibilities and subject himself to the distractions of medical practice. He exchanged his lectureship in the Bristol Medical School for one on Physiology; and in the next year he brought out a second edition of his first work, which was speedily followed by his 'Principles of Human Physiology.' After completing this, he applied himself to the study of the microscopic structure of the shells of Mollusca, Crustacea, and Echinodermata, the first results of which were communicated to the British Association at its meeting in 1845, and were published in the 'Annals of Natural History' for that year; the details of his subsequent more extended researches, carried on by the assistance of grants from the Association, being published in its Reports for 1844 and 1847, with forty plates lithographed from original drawings. By these inquiries, which first gained for him a repute as an original investigator, he discovered that a very definite structural arrangement exists in the shells of Mollusca generally, which presents modifications that serve in many instances to characterize natural groups. The group of *Brachiopoda*, in particular, he showed to be thus distinguishable from other bivalves; and he further found that among the Brachiopods themselves, certain groups of species are differentiated from the rest by having their shells perforated with large canals, which are occupied in the living animal by cæcal prolongations of the mantle. This latter portion of the inquiry was subsequently extended by Dr. Carpenter through a much greater range, at the request of Mr. Davidson; to whose elaborate work on British Fossil Brachiopoda (published by the Palæontographical Society) he contributed an Introductory Memoir on the Microscopic Structure of the Shells of that group. In regard to the *Echinodermata*, he demonstrated that the calcareous reticulation which had been found by Professor Müller to constitute the basis of the skeleton in *Pentacrinus*, and of which Professor Valentin had shown the "test" and "spines" of the *Echinus* to be composed, exists in

some form or other through the entire class, of which its presence is a characteristic feature. And he was the first to show that the shells of the larger Decapod *Crustacea* have a tubular structure resembling that of dentine.

Although commenced in Bristol, these researches were chiefly prosecuted in London, whither Dr. Carpenter had removed in 1844, on his appointment to the Fullerian Professorship of Physiology in the Royal Institution. In that year also he was elected a Fellow of the Royal Society. In 1845 he became joint-Lecturer with Mr. Adams on Anatomy and Physiology at the London Hospital, undertaking the portion of the course devoted to General Anatomy and Physiology, which he continued to give for twelve years. In 1847 he was appointed Examiner in Physiology and Comparative Anatomy in the University of London, which post he held until he succeeded to the Registrarship; and in the same year (his term as Fullerian Professor having expired) he was elected by the Trustees of the British Museum to the Swineyan Lectureship on Geology, an appointment tenable for five years only. About the same time he succeeded Dr. Forbes in the editorship of the 'British and Foreign Medical Review,' to which he had been a constant contributor on physiological and psychological subjects from the date of his first connection with it; the Physiology of the Nervous System, in particular, having been very fully discussed in its pages; and an article on the Physiology of the Encephalon (October, 1846), having given a blow to the Gall and Spurzheim system of Phrenology, from which it has never since recovered. Advantage was taken of Dr. Forbes's retirement to unite with his Journal the 'Medico-Chirurgical Review,' originally established by Dr. Johnson; and to the 'British and Foreign Medico-Chirurgical Review' thus constituted, Dr. Carpenter devoted a large amount of time and energy during the next five years; not only bestowing on it a careful editorial supervision, but continuing to contribute largely on a greater range of subjects than he had discussed under Dr. Forbes's editorship. Thus, in the first number of the new Review (January, 1848), he drew attention to the treatise of Steenstrup on the "Alternation of Generations," and to the researches of Sir J. G. Dalyell on the Development of Zoophytes; and showed that the so-called "alternation" of form occurs only between the products of the *gem-*

miparous and of the *sexual* methods of multiplication, the latter only being truly entitled to the title "generation," and its products being always the same. The essential distinction between the two methods, notwithstanding the close apparent similarity which they present in many instances, he sustained in a subsequent critique of Professor Owen's 'Parthenogenesis;' and he had the satisfaction of finding the same view independently promulgated by Mr. Huxley, as the result of his researches on the *Acalephæ*. Another of his contributions to the Review, "On the Predisposing Causes of Epidemics" (January, 1853), in which he attempted to show that all the recognized agencies which prepare the body for the reception and development of zymotic poisons, have one common *modus operandi*, attracted considerable attention amongst those who have specially studied the conditions of the spread of those diseases.

In 1849, Dr. Carpenter was appointed Professor of Medical Jurisprudence at University College, as the successor to Dr. A. T. Thomson; and this chair he continued to hold until 1859. In 1850 he published, in the 'Quarterly Journal of the Geological Society,' a paper on the Microscopic Structure of *Nummulites* and certain allied genera, which was the first of his contributions to a department of zoological research—the Natural History of the *Foraminifera*—to which he has since devoted a large amount of successful labour. In the same year he communicated to the Royal Society a memoir "On the Mutual Relations of the Vital and Physical Forces;" in which he showed the application of the views not long before promulgated by Mr. Grove on the "Correlation of the Physical Forces" to Physiological science; maintaining that what is called "vital force" really has its origin in solar light and heat, not (as generally taught up to that date) in a power inherent in the germ; that which the germ supplies, according to his views, being the directive agency by which forces derived *ab externo* are used in the building-up and maintenance of the organism. This memoir, which was published in the Philosophical Transactions for 1851, made little impression at the time; but its conclusions have since been accepted as a part of the general doctrine of "Conservation of Energy," previously promulgated by Mayer and Helmholtz, but not at that time known beyond Germany.

In the spring of 1851, Dr. Carpenter published a third edition

of his 'General and Comparative Physiology,' to the preparation of which he had devoted all the time he could spare for two years, endeavouring to make it as complete in every respect as the existing state of scientific knowledge admitted. And he then applied himself to the preparation of a fourth edition of his 'Human Physiology,' similarly recast in an improved form, with the addition of an outline of the operations of the Mind, in which he developed those views of the relation of its *automatic* to its *volitional* activity, which had been suggested to him by the study of the parallel phenomena presented by the Nervous System. Of these physiological treatises it has been said, by a high scientific authority,* that they "have served, more perhaps than any others of their time, to spread the knowledge of those sciences, and promote their study among a large class of readers;" and that, "whilst they admirably fulfil their purpose as systematic expositions of the current state of knowledge on the subjects which they comprehend, they afford evidence throughout of much depth and extent of original thought on most of the great questions of physiology." About this time also he prepared for the 'Cyclopædia of Anatomy and Physiology' an article on the "Varieties of the Human Race;" in which he strongly upheld the doctrine of their specific unity, as that which is alone consistent with an enlarged view of their physiological and psychological relations.

In 1852, Dr. Carpenter was induced to undertake the office of Principal of University Hall; an institution on the plan of the Halls at Oxford and Cambridge, for the reception of students at University College. On accepting this appointment he relinquished the editorship of the 'Medical Review,' which had greatly interfered with his scientific pursuits; and devoted such time as he could command to the study of the Australian and Philippine Foraminifera, which had been placed in his hands by Mr. Jukes and Mr. Cuming, and which furnished the materials of four memoirs successively presented to the Royal Society, between 1856 and 1860. In these memoirs, which were devoted to the elucidation of the minute structure of the most highly-developed forms of the class, Dr. Carpenter "described some remarkable types which were previously quite unknown; he

* Sir B. Brodie's Presidential Address at the Annual Meeting of the Royal Society in 1861.

gave a detailed account of the very complex organization existing alike in the foregoing and in types previously well known by external configuration ; he demonstrated the entire fallacy of the artificial system of classification (D'Orbigny's) hitherto in vogue, the primary divisions of which are based on the plan of growth ; he laid the foundation of a natural system, based on those characters in the internal structure and conformation of the shell, which are most closely related to the physiological conditions of the animal ; and finally, by the comparison of very large numbers of individuals, he proved the existence of an extremely wide range of variation among the leading types of Foraminifera ; often reassembling under a single species varying forms, which, for want of a sufficiently careful study, had not merely been separated into distinct species, but had been arranged under different genera, families, and even orders. In this last conclusion, which has an important bearing on the question of the real value and meaning of natural history species generally, Dr. Carpenter's conclusions were fully borne out by the parallel inquiries of Messrs. Parker and Rupert Jones ; which, relating to an extensive series of less developed types not especially studied by him, have formed, as it were, the complement of his own."*

During this period Dr. Carpenter was also giving much attention to that very curious psychological inquiry, the nature of those states to which the terms Mesmerism, Hypnotism, Electro-biology, Odylism, etc., have been applied ; and he embodied the results of his inquiries in an article entitled "What to believe in Mesmerism," etc., contributed to the 'Quarterly Review,' for October, 1853. In this article he applied the doctrine of the automatic action of the mind under the influence of Suggestion, the Will being in abeyance, to the explanation of the phenomena of the conditions alluded to,—an explanation which has proved equally applicable to the *genuine* phenomena (those which are referable to trickery or to self-deception being excluded), since known under the general designation Spiritualism.

Whilst residing for a short time at Tenby, in the summer of 1854, with Messrs. G. Busk and Huxley, Dr. Carpenter applied himself to the study of the curious phenomena presented by the

* Address of the President of the Royal Society at the Annual Meeting, 1861.

embryonic development of *Purpura lapillus* (rock-whelk), which abounds in that locality. Each of the nidamental capsules of this species contains several hundred egg-like bodies, from which, however, only about thirty embryos are evolved, each of them many times larger than the ovum from which it originated; and it had been affirmed by MM. Koren and Danielssen that the entire assemblage of ova coalesces into a single mass, which subsequently breaks up into a smaller number of portions, each of which develops itself into an embryo. Dr. Carpenter, on the other hand, was led to the conclusion that of the total number of egg-like bodies only a few are real ova, the rest being yolk-segments; and that while the former develop themselves into embryos, after the usual plan of aquatic Gasteropods, it is the latter alone which coalesce. To the mass thus formed the embryos attach themselves by their mouths, and gradually ingest the particles of which it is composed, until it is all shared among them; they thus become distended to many times their original bulk, and on the additional store of nutriment thus obtained, their development is carried on to an advanced stage within the capsule. Dr. Carpenter's account of the process was warmly attacked by MM. Koren and Danielssen; but it has been fully confirmed by M. Claparède and other trustworthy inquirers; and there seems a strong probability that it is true of the Pectinibranchiate Gasteropods generally, since in many of them the like replacement of numerous small egg-like bodies by a few large embryos, has been observed.*

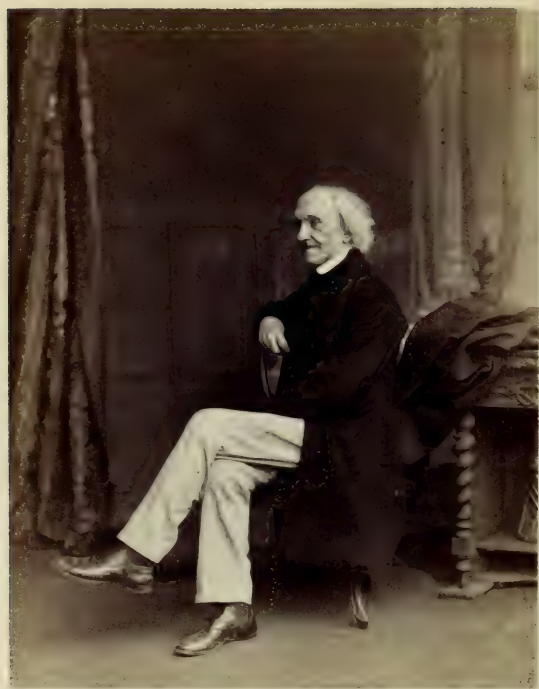
Another edition of both his large systematic treatises being called for, and the volumes having already attained an unsuitable bulk, Dr. Carpenter determined to divide the "General" from the "Comparative" Physiology, reducing the "Human" also by the omission of the topics treated in the "General;" intending that the "General" should thus serve as an introduction to either the "Comparative" or the "Human." He accordingly applied himself to the preparation of a *fourth* edition of the "Comparative," and a *fifth* edition of the "Human"; and would have forthwith proceeded to complete his design by bringing out the "General Physiology," had it not been for the urgency of his publisher, Mr.

* See the original memoir in the 'Transactions of the Microscopical Society,' for 1855; and Dr. Carpenter's defence of it in the 'Annals of Natural History,' for 1857, vol. xx., p. 16.

Churchill, that he should first fulfil a promise of long standing, to prepare a Manual entitled 'The Microscope and its Revelations.' This appeared in the spring of 1856; and shortly afterwards an event occurred, which made an important change in Dr. Carpenter's position.

It had always been Dr. Carpenter's earnest desire to be able to concentrate his labours on the subjects which he felt himself most fitted to pursue, instead of being forced, by the necessity of his position, to derive his income from a wide range of generally ill-remunerated exertion. A vacancy having occurred in the Registrarship of the University of London, he became a candidate for that office; feeling that its duties would be not uncongenial to his tastes, and hoping that they would leave him adequate leisure for the prosecution of the original inquiries to which he was most anxious to devote himself. To this post he was elected in May, 1856; and did not at first find its duties sufficiently exacting to require him to relinquish either his Professorship at University College, or his residentiary appointment; but he thenceforth ceased either to lecture or to examine on Physiology, and applied himself specially to the completion of those researches upon the *Foraminifera*, of which the nature and scope have been already explained. It was chiefly as a recognition of the value of his memoirs on this subject, though not without reference to his systematic treatises on Physiology, as well as to his other special researches, that one of the Royal Medals was awarded to him in 1861 by the Council of the Royal Society. The changes which were made in the constitution of the University under its New Charter of 1858, having brought with them the prospect of a considerable increase in the duties of the registrarship, Dr. Carpenter relinquished in 1859 both his other appointments; and thenceforth devoted himself undividedly to the administration of the University, which has provided for him ample business occupation, whilst leaving him intervals of leisure for the pursuits most congenial to his tastes. By availing himself of these, he has been enabled to prepare for the Ray Society, in conjunction with his friends Messrs. Parker and Rupert Jones, a systematic "Introduction to the study of the Foraminifera;" embodying the most important results of his previous researches, and basing upon these an entirely new system of Natural Classification, which has been ac-

cepted by the highest authorities, both in this country and on the Continent, as completely superseding the essentially artificial system of D'Orbigny. And since the completion of this work in 1862, he has been devoting himself to the preparation of a complete monograph on the Structure, Physiology, and Development of *Comatula*, for which he has been for several years collecting materials; considering no amount of labour misplaced in elucidating the history of an Echinoderm, which affords the only living example accessible to minute study of the Crinoidal type, that has formed so conspicuous a portion of the Marine Fauna through almost the whole range of Palæontological history. Relinquishing to others the duty he so long endeavoured to discharge, of systematizing from time to time the ever-increasing body of new materials accumulated by the activity of physiological investigators, he has determined to employ what may remain to him of time and ability, in the continued prosecution of original researches into such departments of Zoology as he may find most convenient opportunities of studying; in the hope that, whilst himself enjoying the purest and highest pleasure the pursuit of Truth can afford, he may be hereafter remembered as one who has done some service to Science.



JOHN PYE.

THE subject of our present memoir, now in his eighty-second year, has obtained an eminent position in the world of art, firstly, from having been one of the originators of our present English school of Landscape Engraving; secondly, from having taken a prominent part in the foundation of the Artists' Incorporated Annuity Fund, established in 1810; and thirdly, in having been the stanch champion of his profession in its efforts, now crowned with success, to participate, as engravers do in other countries, in Academic honours, but for which he has never himself been a candidate.

John Pye was born at Birmingham, on the 7th of November, 1782. Having acquired some elementary art-knowledge, he came to London at the age of nineteen, and passed four years in the School of the well-known historical engraver, Mr. James Heath. But the French Revolution, and the wars which succeeded it, having destroyed the once flourishing foreign trade in English prints, the most elevating and profitable source of patronage that remained to British painters and engravers (with the exception of portraiture) was the embellishing of books.

About this time a great landscape-painter had arisen, whose works created unusual wonder and admiration. Such skies, such distance, such aerial tints of light and shade emanated from the pencil of J. M. W. Turner, as had never before been seen. The sparkling drawings and vignettes that he produced for book illustrations proved a severe test to the genius of the engraver. Their multitudinous gradations of tints and objects of detail were so varied, that it baffled the attempts of many of the engravers to translate them into the language of the *clair-obscur*, and it was

no small triumph to John Pye when the moment arrived for him to make a successful effort. In 1810, nine years from the time of Mr. Pye's arrival in London, it happened that John Britton selected Turner's picture of 'Pope's Villa at Twickenham,' painted ten years before, for publication in a work he was then bringing out, entitled, 'Fine Arts of the English School.' John Pye was commissioned to engrave it, and when he went with trembling steps to the house of Mr. Turner to show him his first proof, great was his relief when he found the painter from home and was able to leave it for his inspection. Animated with a consciousness of the importance to his professional life of Mr. Turner's judgment, this created some suspense, but it was not of long endurance. A few days afterwards a gentleman of somewhat rough exterior, on horseback, was seen at Mr. Pye's house. It was the great painter. "Oh, this is all right," said Turner, pointing to the proof, "you can see the lights! If I had known any person in the country capable of executing it as you have done, I would have had it engraved before."

From this moment an intimacy sprung up between J. M. W. Turner and John Pye which subsisted more or less through life. Mr. Pye has engraved some of Turner's finest works, and his success in the art has procured for him the honour of being elected a Corresponding Member of the Institute of France. Mr. Pye's largest engravings after Turner are the 'Temple of Jupiter in the Island of Egina,' and the 'Ehrenbreitstein,' both of great merit. The latter picture was painted by Turner at Mr. Pye's request, and when completed, it was sold to Mr. Bicknell. Among other pictures and drawings of Turner engraved by Mr. Pye we may mention especially some beautiful views in Whittaker's 'West Riding of Yorkshire;' his engraving of 'Hardraw Falls' was one which much pleased the painter, and his 'Birthplace of Wickliffe' and 'Junction of the Greator and the Tees.' Two of Mr. Pye's engravings on steel, a small plate of the 'Ehrenbreitstein' after Turner, executed for the 'Literary Souvenir,' and the 'Sunset' of Barrett, are, says a well-known critic recently deceased, "among the most perfect gems of the kind that have ever been produced in this or any other country."

It is now time to speak of Mr. Pye's literary and philanthropic labours in the cause of art. In 1845 he published a volume of

400 closely printed pages, containing a vast amount of historical and gossiping matter, entitled, "Patronage of British Art, an historical sketch, comprising an account of the rise and progress of art and artists in London, from the beginning of the reign of George II., together with a history of the Society for the Management and Distribution of the Artists' Fund, from its establishment in 1810 to its incorporation in 1827, illustrated with notes historical, biographical, and explanatory." Although introduced with the characteristic motto from Barry, "It is presumed that reasonable men look for nothing further than mere information from the writings of artists," the work is an able *résumé* of the subject of which it treats, and is interspersed with some cleverly etched portraits of Mulready, Clint, Warren, Scriven, and others who took part in the management of the Artists' Fund.

The foundation of this admirable institution of provident care, which has always commanded a large share of Mr. Pye's sympathy and support, is thus related by himself.

"In the autumn of 1809, Mr. Scriven, the engraver, attracted by the sufferings of an aged brother engraver, Mr. Tagg, reduced by epilepsy, paralysis, and poverty to a state of destitution, used to wend his way, from his residence at Somers Town, across the busy city, alone and unheeded, to Kennington, to solace affliction. One of Mr. Scriven's visits having been made at a moment when Mr. Tagg's landlord threatened to seize for rent the bed on which he lay, and when Mr. Pollard, the engraver, happened also to be visiting the abode of wretchedness, these two gentlemen embarked together in an effort to mitigate the calamity they had witnessed. They forthwith stayed the landlord's proceedings, and met again, accompanied by a few of their friends, at the Gray's Inn Coffee-house, in furtherance of their purpose. At that meeting a subscription of one guinea each was commenced, and a resolution was taken to endeavour, by making known throughout the profession the facts which had led to the meeting, to awaken generally that sympathy by which a few had become animated. Mr. Scriven acted as secretary, wrote letters of appeal, called another more general meeting,—in a word, Mr. Scriven was the great mover of the honourable purpose, and the result proved the willingness of those, to whom the tragic tale was told, to do good, unaided by the reward of public display, for at the next meeting the subscrip-

tion amounted to £53. 2s. It was then resolved to offer to the creditors of Mr. Tagg, from that sum, a composition in liquidation of his debts, which, in full, amounted to about eighty pounds; and a committee was appointed to give practical effect to the resolution; but at the moment thus much of the good work was accomplished poor Tagg died."

Out of this arose "The Artists' Incorporated Annuity Fund," in which Mr. Pye took so much interest, and by the members of which he was in 1830 presented with a Testimonial in the form of a handsome silver antique urn.

In addition to being elected a Corresponding Member of the Institute of France, Mr. Pye was awarded a Gold Medal by the Government of Louis Philippe, and he is an Honorary Member of the Imperial Academy of Arts of St. Petersburg.



DR. HOOKER, V.P.R.S., F.L.S., ETC.

ASSISTANT-DIRECTOR OF THE ROYAL GARDENS, KEW.

JOSEPH DALTON HOOKER, son of Sir W. J. Hooker, Director of the Royal Gardens, Kew, was born at Halesworth, Suffolk, on the 30th of June, 1817. His father having in 1820 accepted the Chair of Regius Professor of Botany in the University of Glasgow, his early life was entirely spent in that city. He was educated at the High School and University, following up the usual curriculum with the study of medicine, but having imbibed from childhood a strong predilection for natural-history pursuits, collecting and examining, as opportunity offered, plants, minerals, and insects, his interest in such subjects was largely increased by the society which he met at his father's house. The rooms of Prof. Hooker at Glasgow were frequently the resort of scientific travellers, especially those engaged in arctic exploration. Among the associates of Dr. Hooker's youth were Franklin, Parry, Ross, Richardson, and indeed travellers from all parts of the world. Hence the reading of books of travel became a passion with him, and at the age of twenty-two he accompanied, officially as Assistant-Surgeon, but in reality as Naturalist, the famous expedition of Sir James Clark Ross, fitted out by the Government for the purpose of investigating the phenomena of terrestrial magnetism in the south circumpolar seas. It was on the 29th of September, 1839, that the 'Erebus' and 'Terror,' the same vessels which, on their return home, conveyed poor Franklin to his last resting-place in the opposite hemisphere, sailed from Chatham. The officers of the expedition were enjoined to use every exertion to collect objects of natural history, and so actively did Joseph Hooker avail himself of the opportunities afforded by his visits to the various antarctic islands, in addition to those in the vicinity of the Australian continent, that a grant of £1000 was awarded

by the Government to assist in the description and publication of his collected specimens. During three cruises in the south polar regions, the expedition visited Lord Auckland and Campbell's Islands, Kerguelen's Land, Fuegia and the Falkland Islands, often battling with the pack-ice in a terrific surf, or amid blinding snow-storms; while important visits were made to New Zealand and Tasmania. The botanical results of this adventurous voyage, worked out by Dr. Hooker in a manner quite unprecedented for its picturesque and philosophical detail, were published in six quarto volumes of closely-printed pages, illustrated with 500 coloured plates.

On the return of Dr. Hooker to England, after an absence of rather more than three years, he found his father installed at Kew as Director of the Royal Gardens. The describing of his plants, coupled with the arduous duty of collating his specimens with those collected by previous voyagers, preserved in the herbarium of the British Museum, occupied the principal share of his attention until 1846, when he accepted the appointment of Botanist to the Geological Survey. His researches in connection with the duties of this office were directed more especially to the coal plants, and he contributed some valuable papers on the subject to the publications of that institution.

It is proverbial that when a man of scientific research has once tasted the pleasures of foreign discovery, his thirst for novelty is not easily satisfied. Dr. Hooker having acquired a knowledge of the botany of the temperate zones, now felt a desire to explore that of the tropics. In 1847 the adventures of Sir James Brooke excited a great deal of interest in Borneo, and the Government were sanguine enough to think that the island might be made an emporium of British commerce. Coal was reported to exist at Labuan, and Dr. Hooker was invited by the Government to examine and report upon the capabilities of Borneo for cultivation. Being unacquainted with East Indian tropical productions, he obtained permission to qualify himself for the work by first visiting India. Partly at the expense of the Office of Woods and Forests, but chiefly from his own and his father's resources, he undertook an important botanical mission to the Sikkim and Nepal Himalayas; his chief object being to collect facts for a geographical distribution of plants. He sent home rich collections both of dried and living plants, amongst the latter of which must especially be

mentioned a magnificent series of new *Rhododendrons*, which now form conspicuous ornaments of our gardens and greenhouses. From drawings and specimens of these, transmitted by him to England, Sir William Hooker edited a superb folio volume, entitled '*Rhododendrons of the Sikkim-Himalaya.*'

His Sikkim explorations were not unattended by adventure; for after lingering for some months amongst the mountains, he was joined by Dr. Campbell, the political resident at Darjeeling. Together they crossed the jealously-guarded frontier of Tibet, remaining two days on the forbidden grounds north of the snowy range. On their return into Sikkim, the natives of that country, with the short-sighted policy of semi-civilized people, seized and threw them into prison, thinking thus to extort a more favourable treaty from Dr. Campbell. For six weeks they were detained; after which their return to Darjeeling was connived at, the natives being dismayed at the intelligence that an English force was advancing to their rescue.

According to the original plan, Dr. Hooker should now have proceeded to Borneo; but by this time that country had become unpopular with the Government, and reports of the unhealthy state of its coast having excited some alarm, the Malayan survey was abandoned, and Dr. Hooker obtained leave to devote the additional time intended for that service to an expedition to the Khasia mountains, in company with Dr. Thomson, H.E.I.C.S.

Dr. Hooker returned to England in 1851, and two years afterwards published a narrative of his expedition, under the title of '*Himalayan Journals, or Notes of a Naturalist in Bengal, the Sikkim and Nepal Himalaya, the Khasia Mountains, etc.*'

In 1856, the botanical establishment at Kew, with its museums, herbarium, and library, had so largely increased, that an appointment was created for him under his father as Assistant-Director, and that admirably-managed institution has since that period had the benefit of his services. Dr. Hooker is a Vice-President of the Royal and Linnean Societies, and it is in the Transactions of these Societies, especially the latter, that his principal botanical papers have been published. His most important work is a new '*Genera Plantarum,*' written in conjunction with Mr. Bentham, on the plan of Endlicher's famous work, of which the first Part appeared in 1862. He is also one of the authors engaged in the preparation

of a valuable series of the Floras of the British Colonies, now publishing under the authority of the Government.

Dr. Hooker married, in 1851, the eldest daughter of the Rev. J. S. Henslow, the late Professor of Botany in the University of Cambridge.



JOHN OBADIAH WESTWOOD, M.A., F.L.S.

JOHN OBADIAH WESTWOOD was born at Sheffield, on the 22nd December, 1805. His father was an ingenious manufacturer in that town, having been originally brought up as an engraver, which profession he subsequently extended in various directions, including the embossing of wood, ivory (for which latter he obtained a patent), paper, cardboard, etc., the manufacture of buhl-work, medal and coin engraving,* the making of pill-boxes from deal shavings,† etc. As an artist he used to boast that he was the first to discover the talents of Chantrey, the celebrated sculptor, then an apprentice to a carver and gilder in Sheffield, and that he first placed a modelling-stick and wax in his hands. The artistic talents of the father influenced the taste of his only son, the subject of this notice, whilst the scientific character of his schoolmaster, Mr. J. H. Abraham, F.R.S.,‡ of Sheffield, widely known as an excellent lecturer and practitioner of experimental science, gave a scientific

* The father engraved many of the dies for the local tokens, which were in such extensive circulation all over the kingdom at the beginning of the present century, and the collection of which by amateurs became a subsequent mania. The last token which he issued was a satirical one, the obverse representing a collector of these coins seated at a table with a figure standing behind him placing a fool's-cap on his head, whilst on the reverse were a couple of donkeys, ridden by sweeps, with the inscription, "Asses running for half-pence." Very few copies of this token were issued, but the collectors bought them up at very high prices.

† This idea was borrowed from the Dutch, but Mr. Westwood significantly embossed the word "Faith" on the lids of his boxes, which had a vast sale, but which were subsequently beaten out of the market by the cardboard boxes still in use.

‡ Mr. Abraham was the inventor of a small magnetic instrument to protect the mouths of the Sheffield working-cutlers from imbibing the steel filings produced in grinding processes, which had proved detrimental to their lives to a very great extent.

direction to his mind, to which the gift of a small microscope, ever since in daily use, materially contributed. The latter part of his education was acquired at the grammar school of Lichfield, to which city his family had removed in 1819, where the beautiful cathedral of St. Chad failed not to attract his attention to the charms of religious architecture and art, whilst a small collection of insects, formed by a relative at Demerara, on the river Essequibo, in British Guiana, and an acquaintance with Dr. Wright, of Lichfield, who possessed, amongst the remnants of the famous museum of Dr. Green, of that city, a fine case of insects (subsequently purchased in 1821 by Mr. Westwood), invited his attention to the examination of the peculiarities of the insect-world, for which he has subsequently become renowned.

But sterner duties of life now arose, and on removing to London he was articled to a legal firm in the City, in 1821, where he served the five years of his clerkship, on the completion of which he was admitted a partner in the firm, and continued to practise as an attorney for several years; entomology, however, proved too strong for special pleading and conveyancing, and he shortly relinquished the legal profession and devoted himself entirely to his favourite pursuit.

For some time the collecting of British insects of all orders formed the main subject of his pursuit, and, as he resided at Chelsea, Coomb Wood, Wimbledon Common, Battersea Fields (now covered with railroads), and the adjacent parts, formed the especial localities where he employed his entomological net. From the first, however, his attention was directed to the economy and structure of insects, and he eagerly studied and made copious abstracts from the works of Kirby, Spence, Leach, Rösel, De Geer, and especially of the 'Règne Animal,' of which the first edition appeared in 1817. He has often remarked that the characters of scientific persons seem especially to be influenced by the character of the works most in vogue at the time of their entrance on scientific pursuits; for example, as occurred about the year 1810, the works of Marsham and Haworth were recently published. These were almost exclusively confined to technical descriptions, whence arose a school of descriptive entomologists, including Curtis, Leach, and Stephens. The last-named author never rose beyond the rank of a describer of species, whereas Curtis, from having deeply studied the 'Genera Crustaceorum et Insectorum' of Latreille, as appears from

his recently-published biography (contributed by Mr. Westwood to the 'Annales' of the French Entomological Society), added to his *specific* details a love of *generic* forms which resulted in the publication of his magnificent work on British Entomology.

Whilst resident at Chelsea he formed the acquaintance of Mr. Haworth, whom he was in the habit of regarding as his entomological tutor, and who liberally opened his cabinets to the young entomologist, who was thus enabled to delineate a great number of remarkable exotic genera of various orders. To the celebrated work by Macleay, 'Horæ Entomologicæ,' and the third and fourth volumes of the 'Introduction to Entomology,' by Kirby and Spence, Mr. Westwood was also greatly indebted for the direction which his mind more especially took in entomological science.

Mr. Westwood's first entomological communication was published in the 'Literary Gazette,' of 24th March, 1827, announcing the capture of two very remarkable species of Hymenopterous insects, for the first time in this country. This was followed, in the same year, by a memoir on the family Staphylinidæ, published in the 'Zoological Journal,' to which work, as well as to 'London's Magazine of Natural History,' the 'Entomological Magazine,' the Transactions of the Linnean Society, the 'Annales' of the French Entomological Society, and the Transactions of the Entomological Society of London, Mr. Westwood contributed a very extensive series of memoirs on almost every branch of entomological science.

Having long perceived the want of a work of a character intermediate between such general treatises as Kirby and Spence's 'Introduction to Entomology,' and works consisting mainly of descriptions of species, Mr. Westwood planned a work upon the families of insects, arranged systematically, and under each family he proposed to arrange the vast mass of facts relative to their structure, economy, transformations, etc., dispersed through the publications of scientific societies. This laborious task occupied many years' research, and resulted in the publication of 'An Introduction to the Modern Classification of Insects, founded on the Natural Habits and corresponding Organization of the different Families,' in two thick octavo volumes, in the years 1839-40. The many hundred figures of structural details illustrating this work were drawn by the author.

Mr. Westwood subsequently published an extensive series of

entomological articles in Partington's 'Encyclopædia,' and a small entomological Text-book; also a work, in two volumes octavo, containing descriptions and figures of new and remarkable exotic insects, under the title of 'Arcana Entomologica,' 1841-5, with ninety-six plates; a handsome quarto volume devoted to Indian insects, entitled the 'Cabinet of Oriental Entomology,' with forty-two plates, 1848; also a work, in three volumes quarto, on 'British Butterflies and Moths;' as well as the greater portion of the folio work on the 'Genera of Diurnal Lepidoptera,' commenced by the late Mr. Edward Doubleday. Of all these works, except the two last-mentioned, the numerous illustrations were entirely executed by the author, who also lent his assistance in drawing and dissecting insects for the illustration of memoirs published by several of his entomological friends. A tolerably complete list of Mr. Westwood's entomological writings was published by Dr. Hagen in the 'Bibliotheca Entomologica,' 1863, extending to 379 articles, and occupying sixteen pages.

On the 1st May, 1827, Mr. Westwood was elected a Fellow of the Linnean Society of London, and shortly after the establishment of the Entomological Society, he accepted the honorary office of Secretary to the Society, of which he performed the duties for fourteen years. In 1833 he became a Member of the Entomological Society of Paris, and on the death of Humboldt in 1860 he was elected one of the four foreign Honorary Members of the same Society. Many other societies of natural history, at home, on the Continent, and in America, have also elected him an Honorary or Corresponding Member.

On the 30th November, 1855, the Royal Gold Medal was awarded to him by the Royal Society, and on the 6th of May, 1858, the University of Oxford conferred on him the honorary degree of M.A.; at the latter period he had removed to Oxford, and had undertaken the keepership of the large collections of natural history (especially entomology), fine arts, and books, presented to the University by the late Rev. F. W. Hope; and on the foundation by that gentleman of a professorship of zoology at Oxford, he was appointed Professor and took up the ordinary Master's degree.

The taste for Christian archæology inspired in the mind of Mr. Westwood during his residence at Lichfield, had not been allowed to lie dormant, and the fine English works of Strutt, Dibdin, Shaw, and Astle, and the foreign ones of D'Agincourt, Willemin,

Du Sommérard, and Langlois, gave it a direction towards the study of illuminated manuscripts, whilst the introduction of chromolithography offered facilities for the publication of works on that subject not previously existing. The works of Dibdin and Strutt had, it is true, been confined to the representation of the more artistic portion of these precious relics of bygone days, whilst Astle had confined his work to their palæographic character. The noble works of Count Bastard and Sylvestre* proved, however, how attractive the union of these two portions of the subject might be made, and this led to the publication, by Mr. Westwood, in the years 1843-1845, of the '*Palæographia Sacra Pictoria* ; being a series of illustrations of the Ancient Versions of the Bible, copied from illuminated manuscripts executed between the fourth and sixteenth centuries.' In this work, consisting of fifty quarto plates, printed in gold and colours, the author endeavoured to show that in all ages versions of the Scripture have been made in the mother-tongue of almost every nation ; and also, in a more especial manner than had been previously done, to exhibit the distinctions of the very remarkable styles of Anglo-Saxon and Irish art ; with this view not fewer than twenty plates were devoted to our early manuscripts, amongst which, for the first time, the magnificent '*Book of Kells*,' of Trinity College, Dublin—the most elaborate manuscript ever executed in these islands—was brought before the notice of the public. The whole of the drawings and plates of this work were executed by the author.

This work was followed in 1846 by the '*Illuminated Illustrations of the Bible, copied from Select MSS. of the Middle Ages*,' published in small quarto, and comprising forty plates, illustrating subjects of Biblical history.

Since the publication of these works Mr. Westwood has continued his investigations of the artistic peculiarities of Anglo-Saxon and Irish Manuscripts preserved in all the principal libraries of England and the Continent, the results of which will be shortly given to the public in a work now in the press, entitled '*The Miniatures and Ornaments of Anglo-Saxon and Irish Manuscripts*,' illustrated in fifty plates, imperial folio size.

The remarkable and interesting analogy existing between

* Of the '*Paléographie universelle*' of Sylvestre, edited by Champollion, Mr. Westwood's translation of the entire text was published in 1850, with additional notes by Sir F. Madden, by Mr. H. Bohn.

these early manuscripts and the numerous sculptured stone pillars found in many parts of our islands, to which the name of Runic Crosses has, in many instances, been misapplied, early attracted the notice of Mr. Westwood, and led to his undertaking many journeys and pedestrian excursions in search of such stone monuments, especially in various parts of Wales, where he has been rewarded by the discovery of a considerable number of Romano-British and early Christian memorials, previously unpublished, of which he has, from time to time, given notices, with figures in the pages of the 'Archæologia Cambrensis.' His extensive collection of rubbings and drawings of this class of monuments contain a considerable number of still unpublished remains.

The value of another interesting source of illustrations of early Christian art, which had been previously greatly neglected, was early appreciated by Mr. Westwood. The carved ivory diptychs, triptychs, and other similar works, which had been in use as objects of devotion from an early period, but which, except in the great work of Gorius, had received but little attention from archæologists, supplied an important link in art, scarcely any stone sculptures executed from the fifth to the fifteenth century being in existence abroad, whilst these small objects (from the almost indestructible material of which they are composed, and its comparatively slight value, the workmanship alone rendering it of importance) had been in use during the whole of the Middle Age period. These objects likewise afford great facilities to the copyist, since casts in plaster of Paris may easily be made from them, which, treated with stearine, so closely resemble the original ivory carvings as to deceive an ordinary observer. Of such casts Mr. Westwood now possesses more than a thousand examples, ranging from the period of the Assyrian monarchy to the end of the seventeenth century. Various memoirs on the subject of these ivories have, from time to time, been published by Mr. Westwood in the 'Literary Gazette,' 'Gentleman's Magazine,' and the 'Stereoscopic Magazine.'

Numerous other memoirs on archæological subjects have been contributed by Mr. Westwood to the 'Journal of the Archæological Institute,' the 'Archæologia Cambrensis,' etc.



ALEX. J. BERESFORD BERESFORD-HOPE,

LL.D. CAMB., D.C.L. OXON., ETC.

THERE are few persons who have more eminently distinguished themselves in promoting the revival of the glorious architecture of the middle ages in this country than the subject of our present memoir. The zeal of Mr. Hope in eliciting improved designs for the erection and decoration of churches has been exhibited in several splendid examples of ecclesiological taste, while he has occupied himself with spirit and public advantage for some years past, both in politics and literature.

Alexander James Beresford Beresford-Hope, born January 25th, 1820, is the youngest son of the late Thomas Hope, Esq., of Deepdene, near Dorking, Surrey, author of 'Anastasius,' by Louisa, youngest daughter of William De La Poer Beresford, Archbishop of Tuam and Baron Decies, son of the first Earl of Tyrone, who re-married Marshal Beresford. His father belonged to the renowned banking-house of the same name of Amsterdam, having returned to this country during the time of the French Revolution. Mr. Beresford-Hope was educated at Harrow, where he gained a scholarship and several prizes. From Harrow he went, in 1837, to Trinity College, Cambridge, where, in 1841 and 1844, he took his degrees of B.A. and M.A., having gained the English and Latin Declamation prizes in College and the Members' prize for the Latin essay in the University.

Mr. Hope's political career began at an early age. He was elected Member for Maidstone in 1841 and again in 1847, the latter time without a contest, and he sat continuously for that borough until 1852. Again he sat for Maidstone from 1857 to 1859. In 1859, Mr. Hope stood for the University of Cambridge, but, at the suggestion of several leading friends, he retired, on a private reference, rather than a poll in favour of Mr. Selwyn,

who came in apparently without opposition. In 1862 he contested Stoke-upon-Trent, but was not successful. Mr. Hope entered public life as a Conservative, and opposed the Repeal of the Corn Laws. He did this, however, not so much from a feeling of opposition to Free Trade, as from a belief that Sir Robert Peel ought previously to have appealed to the country. He was much dissatisfied with the conduct of all parties at that time, and has since professed himself a Liberal Conservative. One of the most important votes given by Mr. Hope during his parliamentary career was against the Ecclesiastical Titles Bill, and he was one of the ninety-nine who voted against the Conspiracy for Murder Bill, which, it may be remembered, arose out of the Orsini affair in Paris.

Mr. Hope has taken a warm interest in Church questions, always expressing himself a decided, though not extreme High Churchman. As such he has taken an active part in many Church societies. In cooperation with his friend the Rev. E. Coleridge, he was largely instrumental in that great and useful work of converting the remains of St. Augustine's Abbey, Canterbury, into a Missionary College for ministers of the Church of England. It was opened by Archbishop Sumner, under the title of St. Augustine's College, on the 29th of June, 1848. Mr. Hope has devoted much attention to art, especially architecture, and is well known as a leader of the Gothic School. He is President of the Ecclesiological Society, for the study and advancement of ecclesiastical art; and he is also President of the Architectural Museum, an institution specially intended for the improved artistic education of the art-workman, whose cause he pleaded before the Royal Academy Commission. Among architectural works of a high order in the erection and decoration of which Mr. Hope has taken a conspicuous interest, we may mention, in addition to St. Augustine's College, Canterbury, the beautiful church of All Saints, Margaret Street, Cavendish Square, London, of which Mr. Butterfield was the architect, and in which there are some fine fresco paintings by the late Mr. Dyce, R.A., and other artists. One of the choicest examples of Mr. Hope's taste in ecclesiological matters may be seen in the church of Kiuldown, near his seat of Bedgebury, Kent. In 1842 he filled the windows of this edifice with painted glass from the late King of Bavaria's manufactory at Munich. It was the first seen in this country, and the

re-fitting of the church was ably carried out by Mr. Carpenter, an architect of great promise, since deceased.

As an author, Mr. Hope is chiefly known by his 'English Cathedrals of the Nineteenth Century,' published by Murray, in 1860. The work embodies an ideal description of a cathedral, viewed both as a building and as an institution for the service of the Church of England, and it is put forth as representing the type of what the author thinks it ought to be. Mr. Hope has also published several pamphlets, lectures, papers, and addresses, some political, others delivered before literary and scientific societies, chiefly on art questions. Among his anonymous contributions to literature may be mentioned articles in the 'Saturday Review,' which journal he mainly helped to establish, the 'Quarterly Review,' the 'Christian Remembrancer,' and other similar periodicals, and he is the reputed author of a series of letters on the subject of the Papal aggression and of church questions in general, which appeared in the 'Morning Chronicle,' from 1850 to 1854, and were published subsequently in a collected form, under the title of 'Letters on Church Matters, by D. C. L.' Mr. Hope has taken a warm interest in the American disruption, and has published several lectures on the subject of this unhappy strife. He was one of the first public men in this country to declare openly for the South, and is Chairman of the Southern Independence Association of London. We may also mention here, while recurring to Mr. Hope's political career, that he was Chairman of the Association which carried the Repeal of the Hop Duties.

The direction of Mr. Hope's taste and pursuits in the cultivation of ecclesiological art and antiquities may be gathered, in addition to the foregoing remarks, from the circumstance of his being a Fellow of the Society of Antiquaries, and Honorary Fellow of the Institute of British Architects. He possesses a fine collection of old books and pictures, and some curious articles of mediæval and Renaissance date, among which may be mentioned a valuable sardonyx jewelled and enamelled ewer, attributed to Cellini, formerly in the possession of the French Crown, now exhibited in the Museum of South Kensington.

On the death of his relative and stepfather, Marshal Beresford, in 1854, the title having become extinct, Mr. Hope prefixed the name of Beresford to his own by royal licence, in memory of the deceased Viscount and of his mother, and inherited the pro-

perties of Bedgebury Park, Kent, and Beresford Hall, Staffordshire. This latter seat, belonging originally to the Beresford family, passed, in the seventeenth century, into the possession of the renowned poet and angler Charles Cotton. Here Cotton and his friend Izaak Walton fished, and here many of the scenes described in their 'Complete Angler' were derived. The property was repurchased by Lord Beresford in 1824. Mr. Hope married, in 1842 Lady Mildred Gascoyne-Cecil, eldest daughter of the Marquis of Salisbury, and has living eight daughters and two sons.



MATTHEW FONTAINE MAURY.

MATTHEW FONTAINE MAURY, fourth son of Richard Maury, a farmer in Virginia, was born on the 14th of January, 1806, in Spottsylvania County,—a county memorable henceforth in American history as the scene of “Stonewall” Jackson’s dashing flank attack on Hooker at Chancellorsville, when the Southern hero fell in the moment of victory; and also as the battle-ground of some of the fiercest contests known to modern times between the Confederate and Federal Generals, Lee and Grant.

In 1810, Mr. Richard Maury emigrated to Tennessee, settling near Franklin, a village in Williamson County, about eighteen miles south of Nashville. It was here, amid the noble forests of this fine State, at a time when the Indian and the bear disputed the advance of civilization, that the subject of our memoir passed his early youth. The habits of frontier life, developing a perception naturally keen, soon laid the foundation of that accuracy of observation which has ever been one of his distinguishing characteristics. The starry firmament on a clear night, and the mossy side of the forest oak in darkness or snowdrift, serving as the only guide through the trackless woods, indicate the kind of training to which the physical geographer of the sea has been often heard to ascribe much of his success in the wide and intricate fields of his subsequent researches.

After acquiring such rudimentary knowledge as the schools of his adopted State were at that time capable of imparting, Maury was sent, in his sixteenth year, to the Harpeth Academy. Here his powers of application and thirst for knowledge became so conspicuous, that the Rev. James H. Otey—subsequently Bishop of Tennessee, but at that time Head Master of the Academy—con-

ceived an attachment for him, which gradually ripened into close and lasting friendship.

In the year 1825 he left the Academy and entered the United States' Navy; and, as at that time the schoolmaster was not afloat, a young midshipman left to his own resources was not long in discovering that study in the cockpit of a man-of-war was far more difficult than in the wilds of Tennessee. Indomitable perseverance, however, carried young Maury, as it has carried many other men, young and old, through the greatest difficulties. Anecdotes are related by his contemporaries of the strenuous and successful efforts he made to perfect himself in the theory as well as the practice of his profession, such as working out problems of spherical trigonometry with diagrams chalked on the round shot in the quarter-deck racks, and placed so that he might see them while pacing the deck in the quiet moments of his watch. But perhaps the greatest force of character was shown in the method he adopted to acquire the knowledge of navigation. Having procured an old Spanish book on the subject, he set to work, and, by the aid of a dictionary "killed," to use his own expression, "two birds with one stone,"—learning a science and a language at the same time. Yet, notwithstanding his studious habits, Midshipman Maury had the reputation of being a most attentive officer to the minutest detail of duty, and the general estimation in which he was held appears from the fact of his being constantly selected for any particular service out of the ordinary routine, and especially for the rating of the chronometer,—an instrument at that time just coming into use in the American navy, conducting harbour surveys, the collecting of commercial and other statistics, etc.

In the United States' frigate 'Brandywine,' during the autumn of 1825, the young sailor visited Cowes, in the Isle of Wight. Here he made a grand addition to his slender library in the purchase of a 'Norie's Epitome of Navigation.' But the outlay all but exhausted his funds, for the pay of an American midshipman at that period amounted only to £3. 8s. 1d. per month, out of which Maury allotted £1. 17s. a month to one of his sisters. The remaining £1. 11s. 1d., after discharging his mess-bill and washing-bill, replenishing his wardrobe, and meeting sundry other necessary expenses, left so fractional an overplus, that our young officer was unable to visit any places of interest during the stay

of the frigate in English water. In 1826 the 'Brandywine' returned to New York after a cruise round the Mediterranean, and, having been refitted for three years' service, sailed for the Pacific as the flag-ship of the squadron on that station. From the 'Brandywine' Mr. Maury was transferred to the 'Vincennes' sloop-of-war, then engaged on a voyage of circumnavigation.

The change from the close and crowded steerage of the frigate to the comparatively well-ventilated and roomy mess of the 'Vincennes,' proved a great gain to Mr. Maury, and enabled him to make rapid strides in knowledge. During his service in this ship he nearly completed a set of lunar tables, but, on his return home, found, to his mortification, that the idea had been anticipated; and the tables were consequently useless.

The 'Vincennes' was paid off in 1830, and Mr. Maury was at once offered the appointment of Master in another vessel. He however preferred remaining at home until that great ordeal to a young sea-officer, his examinations, had been passed,—it is needless to say, in his case, successfully and creditably.

Mr. Maury's next appointment, 1831, was as Master to another sloop of war, the 'Falmouth,' ordered to the Pacific station. It was while performing the first section of this voyage, viz. to Rio Janeiro, that he conceived the idea of his celebrated wind and current charts. He was naturally anxious, in this his first great responsibility as a navigator, to make a quick passage, and before leaving New York, had tried in every direction to obtain authentic information as to the best route to be taken,—the winds and currents to be encountered by the way, etc.; but it was soon painfully evident to him, that no such information was to be found in the nautical works of the day. He determined to supply the want, and proposed to the chart agents to construct a chart, showing the daily nature of the weather, clearly marked on the routes to the principal ports of the world.

In the 'Falmouth' he had a cabin to himself; and, in addition to his own scanty stock of literature, there happened to be a large store of books on board, the property of a wealthier messmate. Mr. Maury, forgetting the proverb, "When fortune fills your sail with more than a propitious gale take half your canvas in," indulged so freely in the perusal of Sir Walter Scott's novels (a style of reading quite new to him) as to find it difficult indeed to return to the hard dry studies of his profession.

On this voyage his attention was directed to the curious phenomenon of the low barometer off Cape Horn, and upon this subject he wrote his first contribution to science; the paper was published in the 'American Journal of Science.' Subsequently, from the countless observations sent to him, much additional light was thrown upon the subject, proving that the mean height of the barometer, instead of being nearly 30·00, is in these latitudes less than 29·00,—or, in other words, showing that there is not so much atmosphere, by about one-tenth, within the Antarctic as within the Arctic Circle. With this clue, and from his own personal observations on the nature of atmospheric changes in the Antarctic regions, Mr. Maury was able to theorize on the physical geography of that part of the world, and his predictions have been amply verified by exploring expeditions, since sent to those regions.

During the cruise of the 'Falmouth,' Mr. Maury devoted his leisure time to preparing for the press a work on navigation, which, on his return, was published in Philadelphia, under the title of 'Maury's Navigation;' and, in spite of the jokes levelled by the old commodores and naval officials of that day, against a passed midshipman writing a book, it speedily came into favourable notice; and, upon the founding of the Naval School at Annapolis, it was made the text-book for the Navy.

From the 'Falmouth' he was transferred to the schooner 'Dolphin,' and did the duty of First Lieutenant for some time. He then joined the frigate 'Potomac,' returning in that ship to the United States, in 1834. When paid off at Boston, he found himself free to visit his native State. During his stay there he was married to Miss Anne Herndon, his present wife, to whom he had been engaged nine years,—his pay at that time, as passed midshipman, amounting to merely £8. 5s. 3½*d.* per month.

Soon after his marriage, the American exploring expedition was fitted out, and Mr. Maury was selected for the appointment of astronomer, and also offered that of hydrographer. After many delays—chiefly owing to the inability of the Government to find a captain fitted for such a service, Lieutenant Wilkes (since of 'Trent' notoriety) was appointed to command the expedition, on the ground of his having made a chart of George's Shoal; but, as soon as this became known, Mr. Maury requested to be placed on furlough, which was granted, and the expedition sailed without him.

In 1837 Mr. Maury, after twelve years' service, received his well-merited promotion to the rank of Lieutenant.

During this leisure from professional pursuits, Lieutenant Maury was not idle, but directed his attention to the improving and reforming the navy. Under the quaint title of 'Scraps from the Lucky Bag,' he wrote a series of articles on the subject, urging especially the establishment of a naval school, and the breaking up of the effete Board of Navy Commissioners, the pressure of which upon the maritime resources of the nation was then precisely the same as that now experienced from the Board of Admiralty in this country. He proposed to substitute for it the bureau system, with individual accountability on the part of the chief of each bureau, instead of a joint responsibility with no one to blame, as with the members of a board. He also proposed other improvements, such as the construction of certain railways and canals, coast-harbour defences, the adoption in America of the warehousing system of England, and the establishment of a dockyard on the Mississippi, etc., all of which were adopted by the Government or people, and approved by Congress. The lead he thus took in all measures calculated to develop the resources of his country, to increase its strength, or to benefit its commerce, attracted the favourable attention of his countrymen, and gave his opinions weight and influence with them.

In 1839 he had the misfortune to break his right leg at the knee-joint, which compelled him to use crutches for several years, and made him a cripple for life, destroying all his cherished naval aspirations. After his recovery he gave himself up to literary pursuits, and first became the editor of the 'Southern Literary Messenger,' the leading journal in the South, and the only one of its kind which has lived through a generation; it is still published at Richmond.

In 1842 Lieutenant Maury accepted the appointment of Superintendent of the Depôt for Charts and Instruments at Washington, which in due course, under his management, expanded into the National Observatory and Hydrographical Department of the United States; and here also the opportunity offered of carrying out the cherished ideas of 1831, concerning the construction of charts to show the winds and currents actually encountered by navigators. Lieutenant Maury's first work was to examine the official logbooks, which had been hidden in the cellars of the

department since the establishment of the American Navy. After much labour a quantity of valuable data was extracted, and in spite of many drawbacks, the first chart of the series was produced,—it related to the voyage between the United States and Rio de Janeiro,—but prejudice was strong against its use, and the fear that, by departing from the regular track, the insurance would be lost in case of disaster, caused some time to elapse before any captain could be induced to look at the “new-fangled” plans. At length Captain Jackson, commanding the ‘W. H. D. C. Wright,’ of Baltimore, consented to make the trial, and he made the voyage out and home in the time often taken by old traders on the outward passage alone.

“Nothing succeeds like success,” and after this there was no lack of applicants for the new chart. Its author then drew up the form for a log containing columns for the points most useful in aiding his investigations, and he invited all American masters of foreign-going ships to co-operate with him in accumulating data; and to all who acceded to his wishes presents of charts as they were produced were made. Thus a legion of ships were soon converted into floating observatories, and their officers into zealous co-operators, by whose means an immense mass of information was speedily collected.

Every day the benefit of the new order of things became more and more apparent; and, as soon as his system was firmly established, Lieutenant Maury obtained the consent of his Government to invite the co-operation of the maritime European Powers in the establishment of a general system of meteorological research, and to offer, without charge for their public vessels, sets of the charts and sailing-directions, and, at the same time, to place at their disposal (also without charge) as many copies of the publication as they chose to demand for distribution in the merchant marine, on the sole condition that the merchant-captains receiving them should keep a journal in the prescribed form, and forward it to Washington, or to Admiral Fitzroy’s office in London, properly filled up, at the close of each voyage. The benefits of this great work were thus thrown open to the whole world.

To give some idea of the cost of this undertaking, it may be mentioned that the outlay on account of paper and printing for a single set of Maury’s “Wind and Current Charts,” and the Sailing Directions which accompany them, amounted to as much as \$40 = £8.

To further the thorough carrying out of his ideas, and to divest the plan of even the semblance of exclusiveness, Lieutenant Maury originated the idea of a conference on the part of all nations to settle the form of journal, propose improvements, make suggestions, and otherwise advance the great object in view. This led to the Maritime Conference held at Brussels in 1853. At this reunion of nautical science England, France, Russia, Portugal, Belgium, Holland, Denmark, Norway, and Sweden were represented. England, Holland, and Russia immediately agreed to establish offices to co-operate in Lieutenant Maury's system of research, and their example was soon followed more or less closely by France, Spain, Portugal, Denmark, Sweden, and Prussia. Hence the establishment in London of the Meteorological Department of the Board of Trade, over which Admiral Fitzroy now presides.

Although not yet extended "from the sea to the land, so as to make the system universal," according to the original idea of its founder, many important and interesting discoveries have resulted from the system of research thus instituted, partial as it is; indeed, the great philosopher Von Humboldt declared that Lieutenant Maury deserved the credit of having founded a new department of human knowledge, and which that Nestor of science himself named the "*Physical Geography of the Sea*;" and, in a work with that title, Lieutenant Maury laid before the world some of the most interesting results of his researches.

The new theory of the circulation of both sea and air is peculiarly valuable and conclusive. The author divides the currents into two classes, the occasional and the constant; the former are caused by the winds and other transient agencies; the latter (as the Gulf-stream) are due to perpetually recurring natural causes, such as the alternations of heat and cold, changes in the degree of saltness in sea-water, which continually varies in density, and thereby producing constant change of specific gravity. For example, the waters of the Gulf of Mexico are proved to be both warmer and saltier than those further north into which the Gulf-stream flows, and from which there issues a return current bearing the cold water of the Arctic Ocean into tropical seas, there to be heated and drawn into the Gulf-stream in the constant round of oceanic circulation. It is to the difference of specific gravity, resulting from the action of evaporation and precipitation

upon the water of the Gulf of Mexico and of the Arctic Ocean, that the perpetual flow of the Gulf-stream is mainly due.

That "river in the ocean" is in a state of unstable equilibrium. In the force of its current we behold the ceaseless effort of the sea to restore the equilibrium of repose to its waters, while nature is as ceaselessly engaged in disturbing it. But it is quite impossible, in the narrow space of a biographical sketch, to give more than a very faint idea of the magnitude and value of Lieutenant Maury's scientific deductions. 'The Physical Geography of the Sea' must be read; it contains a summary of the greatest number of facts relating to the physics of the ocean ever brought together.

Perhaps the most remarkable result of these observations was the proving to demonstration that the mouths of the Amazon and Mississippi are at the same place, at least for all practical purposes of commerce, as far as sailing ships are concerned. They are not where those rivers enter the sea, but they are in and off the Straits of Florida; for the fact is now established, that in consequence of the winds and currents which beset vessels under canvas as they come out of the Amazon, the best route for all, whether bound for Europe or for any port beyond either of the stormy Capes, leads off to the northward and westward, and passes through those latitudes where the waters of the Mississippi, coming out of the Gulf of Mexico, mingle with the waters of the Atlantic,—thence the route for all vessels from either river is the same. This fact completely captivated the imagination of Lieutenant Maury, for it placed the two great rivers in close physical and commercial relations. He at once made his views public in a series of letters called the "Inca Papers," the object of which was to call attention to the vast resources which lie dormant in the Valley of the Amazon. He succeeded beyond his most sanguine hopes; his papers were translated and distributed far and wide; and his influence induced the Government of the United States to send exploring expeditions both to the La Plata country and to that of the Amazon, and thus to make known, in an authentic form, the vast wealth that awaits the presence of civilization in those countries. The survey of the La Plata was undertaken by Commander Page, and that of the Amazon and its tributaries by Lieutenants Herndon and Gibbon; and the results amply verified Lieutenant Maury's theories, and moreover so moved Brazil and other South American States, that more liberal

laws as regards emigration, etc. soon followed. Regular steamers are now running on the Amazon, and regular packets connect its mouth with the world at large. Thus the domains of commerce were increased, and one of his great objects in life accomplished.

Irrespective of the scientific and moral interest attached to his labours, the benefits arising to commerce and navigation, in a mere money point of view, have proved to be wonderful, and even now can hardly be estimated. When the researches were commenced, the average passage to the Atlantic Equator was 41 days; by using Maury's charts and directions the voyage is shortened 10 days. Again, from England to California it was then 180 days, it is now 128. From England to Australia it was 127 days, and the return voyage was even of greater length; but by the new route, going by Cape of Good Hope and returning by Cape Horn, the navigator may depend upon good breezes and fair winds, from the time of his crossing the Atlantic Equator to his return to the same place, thus saving at least 50 days in the round voyage between Australia and the mother-country, and this without the smallest outlay on the part of the ship or of her Majesty's Exchequer.

The saving in money to commerce and navigation has been great. A calculation has been made, showing, by the time saved in shortening the voyage between the principal ports of the two hemispheres, what commerce and navigation have, by Captain Maury's labours, gained in money alone. The sum is large, and the lion's share of it has fallen to this country.

It was remarked a few years ago before the British Association by the late Dr. Buist, that in India it was estimated that charts and sailing directions for the eastern seas, such as Captain Maury had at that time prepared only for the Atlantic Ocean, would produce a saving to British commerce of from a quarter to a half million sterling annually. The fulfilment of that prophecy would have been a remarkable result for scientific research in any field, but let us see what has been the actual result, for his researches have since been carried not only into the eastern seas, but into all others.

We have already quoted the saving of time between England and various parts of the world gained by these researches; let us estimate the commercial value of that time, for "time is money." Freights vary according to times and places, but as an average for all voyages by sailing ships it may be assumed to be about a shil-

ling per ton per day; to some ports it is more, to some less; but as a mean for all voyages a shilling per ton per day is not found out of the way. According to this average, freights from Liverpool would be to Rio de Janeiro £2. 10s., to Australia £6. This includes delays in port, loading and unloading, profits, etc.; so that the actual cost of moving a ton of merchandise under canvas at sea may be taken as not less than 6*d.* per day. This would make the saving by a vessel of 1000 tons that takes the new instead of the old route to—

Rio de Janeiro	£250	the voyage.
India or China	250	„
California	1260	„
Australia and back	1250	„

Now, if we could find out the number of sailing vessels of 1000 tons each which are annually required for this trade under canvas between England and other parts of the world, the multiplication of these figures would express startling sums. Suffice it to say, they would be multiplied in each case, except perhaps California, by hundreds. This vast saving has been effected by means so simple, and in ways so gentle and so quiet, that those who have reaped the benefits of it scarcely know whence it comes.

The value of the services thus rendered to science and commerce, and therefore to all countries, but more especially to England and the United States, has been recognized by the principal Powers in Europe, in the bestowal of medals and offers of various orders of knighthood. Gold medals were struck in Maury's honour by Holland, the senate of Bremen, Norway, Sardinia, and Sweden. Austria presented her great gold medal of science, Prussia did the same, and, besides, added the "Cosmos" medal at the special request of Humboldt. France presented two gold medals, and moreover offered the insignia of the Legion of Honour. The Pope established distinguishing flags to be worn at their mast-heads, by all the ship-masters from the States of the Church, who would co-operate at sea in this system of research. Those whose journals were approved by Lieutenant Maury received military rank and became entitled to salutes as they passed its ports; and his Holiness forwarded a complete set of all the medals which had been struck during the Pontificate as a mark of appreciation of Lieutenant Maury's scientific labours. Denmark tendered the order of the Dannebrog; Russia, that of St. Anne; Belgium, the order of

Leopold ; Portugal, that of the Tower and Sword ; but in the Republican judgment of the American Congress, these Orders came under the designation of titles or patents of nobility, and the veto of the Government was put upon them.

The subject of our memoir was now at the summit of his prosperity. He enjoyed the confidence of his fellow-countrymen in a marked degree ; the merchants and ship-owners handsomely acknowledged the value of his services to the shipping interest of their port ; the establishment, under his orders, was daily increasing in strength and usefulness, and from nothing had sprung into the first rank before the world. The great astronomical work he was engaged upon, namely, forming a complete catalogue of everything visible in the heavens, was progressing satisfactorily ; while his name began to be held in reverence and esteem as the American Humboldt, and his darling project, another Antarctic Expedition, seemed on the point of realization, when, like a thunderbolt, in the midst of his useful labours, came the great Civil War in America.

Although absorbed in scientific pursuits, and surrounded by associations from which it was harder to part than life itself, Captain Maury was true to his character, and with the uncompromising honesty which has distinguished him through life, he called his staff together, handed over the Observatory and public property under his charge, sent in his resignation to the United States Government, and upon its acceptance retired to the capital of his State, Richmond. Upon his arrival he immediately tendered his services to the State. It is needless to say that his offer was at once accepted ; indeed, although it was Sunday, the convention was assembled by extra call, and an ordinance passed, creating a Council of three citizens to assist the Governor in the emergency. Captain Maury, of the navy of Virginia, was made one of them, and noon of that day found him busily engaged on his new duties. It may be mentioned here, as an interesting historical fact, that the very first act of the three advisers was to recommend that Colonel Robert E. Lee, who also had resigned his commission in the army of the United States, be invited to come to Richmond and take supreme command of the armies of Virginia. Colonel Lee left Arlington at once, and promptly accepted the invitation.

Captain Maury continued to serve on this Council until the treaty of Richmond 1861, was concluded, by which Virginia formally

agreed to make common cause with the Confederate States. Under this treaty the army and navy of Virginia was incorporated with that of the other States, and Captain Maury thus became an officer in the Confederate Navy.

As soon as it became known in Europe that Captain Maury had joined the Southern cause, he received the most kind and friendly invitations both from France and Russia to become the national guest; the first proceeded direct from the Prince Napoleon, the latter from the Grand-Duke Constantine. The object of both was to rescue from the coming "political whirlpool" the philosopher who had already done such good service to the world at large; but he was proof against the double temptation (the uninterrupted pursuit of his own darling studies, and the ample provision for his family offered at the same time), and in all pureness of spirit gave himself up to the Confederate cause. Of all the patriots of the South, not one can lay claim to more self-sacrificing devotion than Captain M. F. Maury. He unhesitatingly gave up pursuits that had become almost part and parcel of his being,—resigned a position at the head of a department which it had taken years of toil to form and develop, and declined even a better appointment offered by foreign countries, to follow what he felt to be the course of duty in his own country. As if these sacrifices were not sufficient, his house and property have been utterly destroyed at Fredericksburg, and, what was worse, all his books and papers carried off. His wife and family were forced to take refuge in the infirmary of a college, where they now are, and a price was set upon his head; but, in spite of these accumulated misfortunes, Captain Maury has never been heard to express anything but a proud satisfaction that in his darkest hours, he has preferred his country's claim to any mere personal consideration.

Captain Maury's family consisted of three sons and five daughters; of the former, one is killed, one desperately wounded, shot through both thighs, and one is now with him; of the latter, two are married.

Since 1862 he has been separated from his family, having been employed on a special mission to England. The loss to science by the present inaction of Captain Maury is immense. Let us hope that it is only a temporary withdrawal from the field of usefulness he loved so well, and in which he conferred such lasting benefits upon mankind.



ROBERT HUNT, F.R.S.,

KEEPER OF MINING RECORDS.

ROBERT HUNT was born on the 6th of September, 1807, at Plymouth Dock (now Devonport), his young mother being already, for nearly six months, a widow. His father was in the Navy, and perished with all the crew of a sloop of war in the Grecian Archipelago, when carrying dispatches to Admiral Duckworth, who was at that time blockading the Dardanelles. So complete was the wreck that no vestige of the ship was ever found, and so much uncertainty surrounded the matter, that the Admiralty withheld the pensions from the widows for three years, under the expectation that some of the ship's crew would find their way to England. There was, at one time, a belief that this ship had been captured by the Algerine pirates, and the men sold into slavery. Indeed, after the bombardment of Algiers by Lord Exmouth, it was commonly reported that many of these sailors had been found and liberated; and we have heard the subject of the present notice describe his boyish excitement, upon being sent home from school to meet his father. The consequences of this state of uncertainty told sadly upon the widowed mother, and left enduring traces upon the child.

Robert Hunt received his early education in the town of his birth, and, as a child, was remarkable for his powers of memory. The pension granted to the widows of naval officers being exceedingly small, it was only an ordinary country school which could be afforded. When about nine years old, Mrs. Hunt removed her residence to Penzance, and her son Robert was placed at a second-class school in that remote town.

An opportunity occurred which was thought to offer many

advantages, and which would, in all probability, lead to securing a position for Robert Hunt, which could not otherwise be hoped for, and he was sent to London, when not yet thirteen years old. The boy was taken charge of by a surgeon residing at Paddington. He was to make himself useful in the surgery, until he arrived at the age of sixteen, when he was, according to the rules of the College of Surgeons, to have been articled. However, he remained here but eighteen months: he was treated with much severity, and one fine summer morning he ran away. Notwithstanding this, he was befriended by a physician, Dr. Charles Smith, then resident in Hatton Garden, and for five years Robert Hunt divided his time between the doctor's and the house of a brother, who carried on business as a chemist and druggist in Fleet Street. At the expiration of this term, it was found that the cost of attending the lectures and hospitals was more than his mother could afford, and Robert Hunt obtained a situation, and continued for several years in London as an assistant.

An illness, occasioned by his falling through the ice into the river Thames at Datchet, on the night of the funeral of the Duke of York, compelled him to resign his situation and fly to the country. For a period of ten months Robert Hunt remained in the neighbourhood of Dartmoor, and in Cornwall. This time was spent by him in collecting the folk-lore of the people, and we learn that, after this long seclusion, the collection then obtained is now in the press, and will shortly be published.

At this period, too, Mr. Robert Hunt wrote a poem, entitled 'The Mount's Bay,' which was published by subscription at Penzance. This appears to have been the first literary effort that saw light; but we learn that even at school poetic composition was the favourite employment of the boy's leisure.

Robert Hunt returned to the metropolis, and filled for several years a situation of responsibility. He was then induced, by his uncle, to return to Penzance, and commence business in connection with him. This was a most unhappy arrangement, and ended very unsatisfactorily for both parties.

During this time, however, Robert Hunt was active, with a few other young men, in establishing the Penzance Literary and Scientific Institution, and here he gave his first lectures on science. The years which immediately followed this period appear to have been most unhappy ones to the subject of our memoir. His time

was spent, partly in London and partly in Devonport, Mr. Hunt having married a lady of that town. Here he delivered some courses of Lectures on Chemistry, and here he commenced, in 1838, his investigations in Photography. Robert Hunt had, by his lectures, made himself well known in the West of England, and in 1840 he was appointed Secretary of the Royal Cornwall Polytechnic Society. This appointment allowed him much leisure, and this was devoted to inquiries into the "Chemical Action of the Sun's Rays;" "The Influence of Light on Plants;" "The Electricity of Mineral Lodes," and other subjects connected with our metalliferous deposits.

Mr. Hunt during this time produced his 'Manual of Photography,' published by Griffin, which went through five editions; his 'Researches on Light,' published by Longmans, of which two editions have appeared. The investigations carried out by Robert Hunt in the mines of Cornwall recommended him to the notice of Sir Henry de la Beche, and he was offered the situation of Keeper of Mining Records in the Museum of Practical Geology, upon the duties of which office he entered on the 19th of April, 1845. Mr. R. Hunt soon saw the importance of endeavouring to obtain correct returns of the mineral produce of the United Kingdom, and he set on foot an inquiry, which has resulted in the publication of annual 'Mineral Statistics,' giving a more complete return of this valuable British industry than any continental kingdom can show, notwithstanding that the powers of the State are brought to bear, making the returns compulsory; whereas in England those returns are given voluntarily. So valuable to the commercial world are these mineral statistics considered, that a few years since a handsome silver tea-service and a purse of two hundred sovereigns were presented to Mr. Hunt, who also received a handsome testimonial from his Cornish friends on his quitting the office which he held, as secretary to the local society already named.

Settled in London, Robert Hunt was enabled to follow the bent of his mind, in which there is somewhat strangely combined a poetical tendency and a mechanical aptitude. About this time 'The Poetry of Science' was published by Mr. Lovell Reeve, and subsequently his 'Panthea, or the Spirit of Nature.' The former work passed through several editions; the latter production was imperfectly understood, and must be regarded as a failure.

The Government School of Mines was organized in 1851, and Robert Hunt was appointed its first Lecturer on Experimental, or, as it was afterwards termed, Mechanical Science. He continued to fill the two offices of Keeper of Mining Records and Professor of Mechanical Science, until a Government Commission, consisting of Sir Charles Trevelyan and Sir Stafford Northcote, recommended an extension of the Mining Record Office, the utility of which had been rendered evident through Mr. Hunt's exertions. Then Robert Hunt resigned his professorship, and he has since that time devoted himself to his duties as Keeper of Mining Records.

Amongst other publications by which Mr. Robert Hunt has made himself known, his 'Synopsis' and 'Handbook of the Great Exhibition of 1851' must be named. He also published works of the same character at the time of the International Exhibition of 1862. In addition to numerous papers communicated to various periodicals, Mr. Robert Hunt wrote his 'Elementary Physics.' He also edited a new edition of 'Metals and Metallurgy' for Messrs. Longman, and undertook the more important work of producing a greatly enlarged edition of 'Ure's Dictionary of Arts, Manufactures, and Mines.'

In addition to these labours, being impressed with the importance of giving to the metalliferous miner a certain amount of scientific education, to enable him to pursue his arduous employment with more ease and safety, Robert Hunt has for some years exerted himself in the establishment of the Miners' Association of Cornwall and Devonshire. This institution has established classes for the instruction of miners in chemistry and mechanics in each of the mining centres of the two western counties, and it is progressing satisfactorily, Robert Hunt, as honorary general Secretary, being entrusted with the management of an organization which originated in his efforts.

Robert Hunt commenced active life with but a very imperfect education, but, gifted with a capacity for knowledge, and possessing much industry, he has achieved a position of usefulness which we hope he may long pursue.



FORBES WINSLOW, M.D., D.C.L.

DR. FORBES WINSLOW, the 9th son of Captain Thomas Winslow, of His Majesty's 47th Regiment of Foot, and of Mrs. Mary Winslow, whose memoirs are widely known in religious circles, was born at Pentonville, in 1810, and is descended from the Winslows of Massachusetts, who, in the colonial days of America, filled from time to time many important offices in that State. On the termination of the War of Independence, his grandfather, who belonged to the Royalist party, came to England, where his family have since remained. Dr. Winslow received his early education at a private grammar-school at Manchester, and on the first establishment of the University College as a medical school, he commenced his studies there; he afterwards entered at the Middlesex Hospital, and became a pupil of the late Sir Charles Bell, whose brilliant discoveries with reference to the nervous system revolutionized the teaching of our physiologists. In all probability Dr. Winslow's studies were directed towards mental and cerebral diseases by thus early being placed in connection with this great physiologist, whose discoveries laid the foundation for a truthful estimate and a rational treatment of the diseases of the brain and great nervous centres,—at all events, the tendency of his mind was early evinced towards this branch of medicine, and he has continued steadfast in its pursuit. When a student he joined the Westminster Medical Society, and his thoughts ever being directed to the line of practice he had chosen and has since so ably followed, he read a paper "On the Influence of the Mind and Body in the Production of Disease," and another, "On the Influence of the Imagination of the Mother on the Fœtus in Utero." Both papers attracted much attention

and excited keen discussion. Shortly after these papers were read, he contributed another, on "Suicide, Medically considered." This paper formed the foundation for his subsequent work, "The Anatomy of Suicide," which excited much attention at the time of its publication, and was the first English medical treatise on the subject. Whilst still pursuing his medical studies, he contributed largely to the magazines, papers cognate to his own profession, and employed himself in those literary exercises which have since given him such great distinction as a medical writer. The first work which directly associated his name with the practice of lunacy, was his 'Plea of Insanity in Criminal Cases,' a work opening up new views as regards the criminal responsibility of the insane.

Dr. Winslow has throughout his professional career inclined towards the side of mercy in his judgment in all cases where he has seen good reason to suspect mental unsoundness in the culprit, and this tendency, one most undoubtedly in perfect keeping with the humane ideas making such rapid progress in society, has subjected him to some adverse criticism on the part of a certain portion of the press, and his declaration of a belief in the existence of "moral insanity" in minds where the reasoning faculty, to all appearance, is perfectly sound, has drawn upon him much ill-will from those who believe that such a doctrine is calculated to confound vice with disease; but Dr. Winslow has at least the advantage of knowing that if he errs, he does so in common with some of the most profound thinkers of the day. The present Archbishop of York, for instance, when Dr. Thomson, in his article on "Crime and its Excuses," in the Oxford Essays, clearly shows by the following extract that he fully indorses the opinions of Dr. Winslow:—"The day has probably arrived already," he says, "when the existence of moral insanity, of a disease which wrecks the moral perceptions and leaves the intellect almost intact, shall be recognized as fully as any other kind of madness." The testimony of such a man is, we think, pretty conclusive that such opinions may be held by those who feel no inclination to make dangerous innovations in our criminal code, and who are not likely to remove recklessly the safeguards of society.

During Dr. Winslow's active professional career, he has been placed very prominently before the public eye, in consequence of the many civil and criminal cases in which he has given evidence,

and in connection with public trials, in which he has been called upon by the law-officers of the Crown as medical referee. Scarcely any trial that has made a great public impression within the last twenty-five years but has been associated with the name of Dr. Winslow. In the trial of Macnaughten for the murder of Mr. Drummond, his name appeared very prominently. In the civil case in which it was sought to prove that Mrs. Cumming was of unsound mind, Dr. Winslow gave an opposite opinion. In the trial of Atkinson for the murder of his sweetheart; in the case of Mrs. Brough, the wetnurse of the Prince of Wales, who murdered her six children; of Weston, who shot Mr. Waugh, the solicitor, of Bedford Row; of Mrs. Vyse, who murdered her children, etc.; and it is at least due to him to say, that in nearly every case his opinion has rescued the accused from the gallows. His services have also been continually demanded by the prison authorities, to investigate doubtful cases of insanity among prisoners.

This class of experience in medical jurisprudence has led to his being largely consulted in all cases of legal dispute, involving subtle questions of mental capacity, and consequently his practice has assumed the character in some respects, of that of a medical jurist,—a position daily becoming of greater importance, in consequence of the vital points arising in so many legal cases, civil and criminal, affecting large monetary interests, the hereditary mental conditions of families, and the fate of individuals accused of crime.

Dr. Winslow, many years since, established an asylum for the insane, at Hammersmith; and here, for a period of upwards of twenty years, he had an opportunity of practically carrying into operation his scientific, enlightened, and humane views of treating insanity on the most approved curative principles. The practical experience of Dr. Winslow, however, has not been confined wholly to cases of mental alienation; he is consulted very widely in all cases of disease involving the brain and nervous system, where no mental alienation is apparent. The experience his long residence among his patients gave him, has enabled him to take a very prominent place among the leading psychologists of the day, and has earned for him a high position as a consulting physician and medical jurist. His sagacity in discovering and treating incipient symptoms of brain disorder, involving epilepsy, convulsive diseases of all kinds, paralysis, epilepsy, etc., and especially of that terrible malady softening of the brain, have earned for him a foremost

place among the leading physicians of the day, and have won him the confidence of the profession and the public. There is a vast debatable ground between absolute and declared madness, and the myriad forms of nervous disorders to which he has long devoted his attention, and the fruits of which he has given to the public in his elaborate work 'On Obscure Diseases of the Brain and Disorders of the Mind,' which has already gone through three editions.

In the year 1847, Dr. Winslow established the quarterly 'Journal of Psychological Medicine.' This very important contribution to the history of thought, morbid and otherwise, was edited by Dr. Winslow for seventeen years with very great ability. From its very commencement it took liberal and enlightened views of psychological medicine, and the ability of its articles not only attracted the attention of thinking men, professional and otherwise, but enforced contributions from their pens, and it may fairly claim to have established a new branch of scientific thought, which "the world will not willingly let die." This journal was successfully carried on up to the end of last year, when the professional engagements of Dr. Winslow became so pressing as to force him to bring it to a conclusion. The new vein of thought it opened up, however, must continue to influence our literature, advance the science of psychological medicine, and throw much light upon the varying phases of mental alienation.

At the installation of the Earl of Derby as Chancellor of the University of Oxford, Dr. Winslow had the honorary degree of D.C.L. conferred upon him. He is a Fellow of the College of Physicians, Edinburgh, Doctor of Medicine of the University of Aberdeen, and member of the Royal College of Physicians, London, and has been President of the Medical Society of London. In 1851 he was appointed by the Council of that Society "Lettsomian Professor" for that year, in the course of which he delivered three lectures, having reference to his own particular branch of medicine. They were, 1, on the Psychological Vocation of the Physician; 2, on the Medical Treatment of the Insane; 3, on the Medico-Legal Evidence in Cases of Insanity. These lectures were published in 1854 as a separate volume, under the title of 'Lettsomian Lectures on Insanity.'



THOMAS THORNYCROFT, Esq.

THOMAS Thornycroft was the eldest of the three sons of Mr. John Thornycroft, who, at his son Thomas's birth, in 1816, was the occupier of Tidnock Farm, an estate belonging to the Earl of Harrington, in the parish of Gawsorth, near Macclesfield. When the eldest son was but six years old, the father died, and the three boys were left to the care of their mother. Mrs. Thornycroft was an exemplary parent, and to her devotedness in the early training of her son, much of his success may be attributed. Educated first at Congleton Grammar School, at that time presided over by the Rev. Edward Wilson, he was at a suitable age articled as pupil to a Mr. John Fleet, surgeon, of Macclesfield. The uncongenial nature of this pursuit, however, soon manifested itself, and young Thornycroft's surgical studies were neglected for the more attractive pursuits of modelling and carving. His employer at length became dissatisfied, and finally the youth's indentures were cancelled, and the question of the amount of premium to be returned to his mother was referred for arbitration to an eminent surgeon of Macclesfield. It then came out, and the story has often been repeated, that one of the master's most serious complaints against his pupil was indeed a grievous one. To his horror he one day found all his best scalpels hacked and splintered, and on inquiring the cause, found that young Thornycroft had been devoting these instruments, intended for the carving of living flesh and bone, to a more agreeable though inappropriate use, by endeavouring, with their aid, to convert marble into the semblance of skin and muscle. This was indeed too much for the mildest of doctors, and the lad was dismissed, though there is obviously much in a surgical education which might have assisted the destiny of the young sculptor, had his energies flowed in a more discreet channel.

Fortunately the gentleman to whom the arbitration had been referred, took an interest in the fortunes of the young delinquent, and he was speedily furnished with some good specimens to copy from the antique, whereby his eye became educated and his hand acquired dexterity. The bent of his mind being now apparent, and his devotion to modelling and sculpture increasing with practice, it was thought desirable to ascertain the opinion of some of the most leading men of the day upon his prospects, and through the aid of Mr. Edward Hawkins, the Keeper of Antiquities at the British Museum, and Mr. Davenport, of Capesthorpe Hall, Cheshire, specimens of Thomas Thornycroft's work were submitted to Sir Francis Chantrey and to H.R.H. the Duke of Sussex. Chantrey's advice was characterized by the kindness, the straightforwardness, and the candour which so strongly marked his disposition. Acknowledging the freedom of hand which the young man's studies displayed, he added—"But, Sir, this is not the leading feature of a so-called sculptor, though it may be advantageously possessed by him. The skill of the artist consists in the life, expression, sentiment, and design which he imparts to the model in clay; the transferring what he has worked in clay to marble is effected by certain mechanical appliances which render the carver's work comparatively easy. Has your young friend any other profession? If he has, let him follow it, for ours is now not one that a man can fairly rely upon to realize a profitable return for his labour and thought. When I began my career, there were but four sculptors of any note in London, now there are forty at least; and with such competition, had I to start afresh, I could not accomplish the reputation I have attained. But send him up to me, perhaps I may encourage the young man; perhaps discourage him."

Could Sir Francis have lived to witness the state of the arts in England at this day, he would have been startled indeed by the increase in the numbers and the extent of competition which exists amongst sculptors, but he would have discovered that the demand for artistic productions has advanced with equal strides, and that there was little foundation for the apprehension that a genius so forcible and so thoroughly national as his, would not have reaped even a greater harvest of success in this age than in his own.

From the Duke of Sussex's inspection of Mr. Thornycroft's carvings a more important result followed. His Royal Highness having requested Mr. John Francis, then a sculptor of high repute

in London, to attend at the Palace and give his opinion on the works, Mr. Francis expressed great approbation, and the result was, that Thornycroft entered the studio of Mr. Francis as a pupil. Amongst his earlier productions was a bust of Melancholy, suggested by the lines in Milton's 'Il Penseroso,' which was exhibited at the Royal Academy, and purchased by Captain Wellbank, R.N.

In the year 1840, at the close of his pupilage with Mr. Francis, Mr. Thornycroft married the eldest daughter of the sculptor, who is herself an artist of no less celebrity than her husband, and henceforward the names of Mr. and Mrs. Thornycroft are associated together in the annals of British sculpture.

Two years afterwards Mr. Thornycroft experienced the truth of the old saying, generally so appropriate in the case of artists, that "All roads lead to Rome." The winter of 1842 was passed by Mr. and Mrs. Thornycroft in that capital, where they made the acquaintance of Thorwaldsen, Gibson, and other eminent sculptors.

In 1843 Mr. Thornycroft's group of "Medea about to slay her Children" was commenced, a work which was exhibited in the following year in Westminster Hall, by invitation of the Royal Commissioners of the Fine Arts. This composition was very favourably reviewed in the 'Kunstblatt' by Dr. Förster, the eminent German critic, who spoke of it as the only specimen in the exhibition of the "severe" school. It was followed by commissions for two statues in bronze, one of Roger Bigod, Duke of Norfolk, the other of Henry, Earl of Hereford, part of a series of ornamental figures supposed to represent the Barons who signed Magna Charta, and which now stand in niches on either side of the House of Lords.

In the year 1850 Mr. Thornycroft exhibited at the Academy, a group of "Alfred and Ethelburga," a scene representing the Queen in the act of exhibiting to the young Prince Alfred the book which was to be the reward of that one of her children who should first learn to read it. This interesting work has never, as yet, been commissioned.

When the project of the Great Exhibition of 1851 was set on foot, Mr. Thornycroft meditated the preparation of an equestrian statue of the Queen, and his design being favourably entertained by Her Majesty and Prince Albert, every facility was graciously afforded to him for its execution. Not only were elaborate studies of equine proportion permitted to be made in the Royal stables,

but the Queen's celebrated charger 'Haman' was repeatedly taken to the studio, and there with a young female seated on his back, was put through his paces in a circle, in order to give the designer a study of equestrian action. The result was the statue which was exhibited in Hyde Park in 1851. The horse is represented in the action of rearing, with two fore legs off the ground, and being thus rested on the two hind legs only, and requiring some third point of support, this well-known difficulty of sculptors was met by a novel expedient. Her Majesty's riding-dress was represented as reaching nearly to the ground and at its lowest extremity lightly sweeping over a growing plant or flower. By this means a continuity of surface was obtained. This arrangement met with some adverse criticism, but the figure was on the whole admired, and the horse was acknowledged to be an excellent portrait of 'Haman.'

Two or three years afterwards, a statuette in bronze of her Majesty on horseback as she was supposed to be reviewing the troops at Chobham, was executed for the Prince, who had a very sincere appreciation of Mr. Thornycroft's industry and talent. This figure was several times repeated in bronze for the Royal Family. The copyright was afterwards purchased by the Art Union, and the group has by this means become very familiar to the public.

Another interesting work appeared in 1856, being a model for a statue of George Benjamin Thornycroft, a wealthy iron-master of Wolverhampton, and first mayor of that town. This figure is considered to possess many excellences of composition.

Another important work is an altar tomb in Ledbury Church, near Malvern, to the memory of John Hamilton, infant son of John Martin, Esq., M.P., of the Upper Hall, Ledbury. The child is represented as in sleep, under a coverlet, with the hands crossed on its bosom. In this group, the artist is said to have reproduced, without imitation, much of the effect inspired by Chantrey's celebrated Sleeping Children at Lichfield, and Banks's monument to Miss Boothby at Ashbourne.

Somewhere about this period also was produced a figure called "The Knitting Girl," which has attracted the favourable notice of Dr. Waagen. It is marked by simplicity, ease, and gracefulness.

In the year 1857, there appeared in the Academy a bronze statuette of "Washington;" in 1858 a model for a marble statue

of "Lady Anna Chandos Pole," which has been much admired; and in 1860, a sketch for a statue of "Havelock."

Mr. Thornycroft also competed for the Wellington memorial. Into this work an unusual extent of detail was introduced, and the whole history of the Duke's career was, as far perhaps as is possible, narrated in the symbolical language of sculptural art.

For many years of his life Mr. Thornycroft has been engaged at intervals in an historical work of a more imaginative cast, representing Boadicea, accompanied by two of her daughters, launching the thunders of war at a supposed enemy, from a chariot drawn by two horses at full speed. This large heroic work is as yet incomplete; but in its progress it is known to have received the commendations and the encouragement of the late Prince Consort. A cast of the colossal head of the Boadicea was exhibited in this year's Academy.

Mr. Thornycroft is also engaged upon mnemonic statuary for the Palace of Westminster. Two figures, executed in white marble, one of Charles I., the other of James II., each in accurately studied costume, are now on the point of leaving his studio.

The latest of his completed works is a bronze equestrian statue of the late Prince Consort, which was inaugurated at Halifax on the 17th of September last,—the cost, amounting to 1300 guineas, having been met by public subscription. The statue and pedestal measure eighteen feet from the ground. The horse was modelled from an animal named 'Nimrod,' selected from the stud of her Majesty, who, as in the former instance, was graciously pleased to place it at Mr. Thornycroft's disposal. Two other equestrian statues of the Prince, intended for the towns of Liverpool and Wolverhampton, are also in the course of preparation.

Our memoir would be incomplete without a brief allusion to the works of Mrs. Thornycroft. Before her marriage, whilst practising in her father's studio, this lady had acquired great facility in modelling, and had even attracted public attention by a figure which she exhibited of life-size, called "The Flower Girl." After her marriage, and whilst on her visit to Rome with Mr. Thornycroft, the notice of the sculptor Gibson was attracted by two models executed by her whilst in that city, one of "Sappho," the other of a "Sleeping Child." Mr. Gibson was so favourably impressed with these works, that when he was consulted by the Queen as to the person best qualified to carry out her wishes in having models and

statues of the Royal children executed, he at once recommended Mrs. Thornycroft.

Accordingly, on her return to England, Mrs. Thornycroft received a commission from her Majesty, the result of which was the completion of a work representing four of the Royal children in the characters of the four seasons. Princess Alice was represented as "Spring," in the attitude of offering, as it may be supposed to her Royal mother, a flower from a number of blossoms gathered and held up in the folds of her dress. This was exhibited in 1845. Prince Alfred appeared as "Autumn," clutching a bunch of grapes. This was in the following year. Next followed the Prince of Wales, clothed as a shepherd to personify "Winter," and finally the Princess Royal as "Summer," with a reaper's sickle and the ears of corn of a gleaner. These figures have been extensively multiplied by engravings and statuettes, and are the ornaments of innumerable homes here and in the colonies.

In 1847 the Duchess of Kent, in 1850 her Majesty, and in 1852 the Duchess of Gloucester sat to Mrs. Thornycroft for busts; and from that time up to the present she has received frequent commissions from members of the Royal Family, from ladies of the families of Stanhope, Hardwicke, Sutherland, and many other persons of distinction. Amongst other well-known designs there is a very gracefully arranged figure of the Princess Beatrice represented as a child cradled in a nautilus shell. Very lately the Princess of Wales has honoured Mrs. Thornycroft with sittings, and the bust was exhibited last year.

Amongst the whole of Mrs. Thornycroft's productions hitherto completed and known to the public, none probably has attracted more admiration for its artistic merits than the well-known "Skipping Girl," which first appeared in 1856, and was seen to great advantage at the Paris Exhibition of 1861. Critics of every kind and degree are unanimous in commending the free unaffected grace of this youthful figure, which, whilst it is accurate enough to be a transcript of nature, has just enough of generality about it to raise it from a portrait to the rank of an ideal representation.





JAMES SCOTT BOWERBANK, LL.D.,

F.R.S., F.L.S., F.G.S.

JAMES SCOTT BOWERBANK was born in the parish of Bishopsgate, London, on the 14th of July, 1797, at the residence of his father, a rectifying distiller, and in this business, in conjunction with his brother, he succeeded his father, and continued in it until 1847. At an early age he exhibited a strong attachment to Natural History in general, and especially to the science of Botany. His father rented for many years a portion of the River Lea, in the Edmonton Marshes, for his private recreation; and there he usually spent his school holidays. His greatest pleasure was to wander along the banks of the river, and observe the habits of every living creature beneath its surface, and thus he quickly became familiar with all its inhabitants, and with the plants growing in it or on its margins. In 1818 he became a member of the Mathematical Society of Spitalfields, and remained so until its incorporation with the Royal Astronomical Society in 1845. In the Mathematical Society he became acquainted with many men of similar tastes to his own, and entered earnestly into a course of studies of the natural sciences in general. In 1822, 1823, and 1824, he delivered public courses of lectures on Anatomical, Physiological, and Systematical Botany; and in 1831 a course of lectures on Human Osteology. These studies were steadily continued, although actively employed in a manufacturing business demanding constant and anxious attention for at least twelve hours of the day. His pursuit of the Natural History sciences was a labour of love under difficulties, as at that period the reputation of an attachment to scientific pursuits was rather an opprobrium than a merit in a young commercial man, in the eyes of his friends.

His love of Natural History was not confined to the knowledge of species and their habits, but the anatomy and physiology of all the specimens that came under his observation were the especial objects of his study in the few hours of recreation that were at his disposal. In 1833 he published in the 'Entomological Magazine' a paper "On the Circulation of the Blood in Insects," and subsequently "Observations on the Circulation of the Blood, and on the Distribution of the Tracheæ in the Wings of *Chrysopa perla*," and "On the Structure of the Scales on the Wings of Lepidopterous Insects." He also published in the Phil. Trans. of the Royal Society a paper "On the Organic Tissues in the Structure of the Bony Corals;" and in the Transactions of the Microscopical Society, "A Series of Observations on the Structure of the Shells of Molluscous and Conchiferous Animals." These observations were contemporaneous with those of Dr. Carpenter on similar subjects, and the two papers were read during the same week.

An animated and interesting discussion having taken place at one of the meetings of the Geological Society on the origin and structure of flints and other siliceous deposits, Mr. Bowerbank became deeply interested in the subject, and commenced a series of microscopical researches on the structure of those bodies, which resulted in a conviction that, excepting those deposited in the cavities of volcanic and other terrestrial rocks, the origins of these bodies were nearly, if not all, due to the siliceous fossilization of the Spongiadæ. These ideas were strongly opposed at that time, but they have since then been very generally adopted by the modern schools of geologists.

The results of these researches were embodied in a paper "On the Spongy Origin of the Flints and Cherts of the Chalk and Greensand Formations," published in the Transactions of the Geological Society; and in one "On Moss Agates and other Siliceous Bodies," published in the 'Annals and Magazine of Natural History.'

His researches into the origin and structures of the fossil Spongiadæ naturally led to frequent examinations of recent species, and to the discovery of many new and singular forms of organization; and thus a new and interesting field of Natural History was opened to his view, and he determined to enter on a series of observations on the structure and organization of this comparatively unknown class of animals. For this purpose he opened an

extensive correspondence with naturalists and other friends in various foreign localities, from whom he received a great number of highly interesting species of sponges, the results of the examination of which are published in three parts in the Philosophical Transactions. Beside the investigation of the anatomy and physiology of the Spongiadæ, he neglected no opportunity of observing the habits and peculiarities of the living animals, and the results of these observations are published in a paper "On the Ciliary Action of the Spongiadæ," in the Transactions of the Microscopical Society, "On the Vitality of the Spongiadæ," Reports of the British Association for 1856 and 1857, and in a paper "On the Organization of *Grantia ciliata*,"—confirming in these papers the valuable observations previously made by Professor Grant and other writers on these subjects, and adding other curious and interesting facts to our knowledge of this obscure branch of Zoology.

On Palæontological subjects he published microscopical observations on the osseous structure of *Pterodactylus giganteus* and other fossil animals, and was the first to establish proofs of the existence of those remarkable flying reptiles during the period of the deposit of the Chalk. He also described a new and very much larger species of those animals, *C. Cuvieri*, from the Kentish chalk; and subsequently, a paper "On the Pterodactyls of the Chalk," in the Proceedings of the Zoological Society, in which he proved that the distinctions between the bones of these reptiles and those of birds were readily to be made by the differences existing in the structure and proportions of their bone cells. His geological collection was very extensive.

During his annual excursions for the renovation of health, Mr. Bowerbank was in the habit of proceeding to some well-known geological locality, thus acquiring a knowledge of its stratigraphical peculiarities, and at the same time adding largely to his already extensive collection of fossils from almost every British formation. During these excursions, he became intimately acquainted with the best localities of the Yorkshire coast from the mouth of the Humber to that of the Tees, and collected largely from the Oolitic and Liassic formations. Weymouth and Portland, the Isles of Wight and Sheppey, the crag districts, the coasts of Devonshire and South Wales, Ludlow and Wenlock, and various other localities, were successively visited with similar results,

until the collection became so extensive that it was necessary to erect, near his residence at Highbury, a room forty feet by twenty-eight to receive it; and in this museum he accumulated more than four hundred drawers of choice and highly interesting fossils, nearly the whole of which were mounted on tablets by Mrs. Bowerbank. By this means his specimens became well known to geologists, who selected largely from his stores for the illustration of their works. The type specimens thus figured in the works of Messrs. Bell, Busk, Darwin, Davidson, Dixon, Milne-Edwards, F. Edwards, Fitton, Forbes, King, Lindley, Lyell, Murchison, Owen, Wood, Wright, and others, are very numerous; and many are unique, or exceedingly rare or fine. He also collected the fossil fruits and seeds of the London clay of Sheppey to a great extent, having at one period more than 100,000 specimens in his possession.

As a microscopist, Dr. Bowerbank was one of the earliest of the modern school. He was charmed by the beautiful achromatic combinations for the microscope when first produced by his talented friend the late Mr. William Tulley, and henceforth microscopical anatomy and the investigation of minute organisms occupied a considerable portion of his leisure. The possession of one of those beautiful instruments, the fifth that had been made, attracted a considerable number of scientific men to his house, and at last necessitated the appointment of an especial time for the reception of such visitors, and the evenings of Mondays were accordingly appropriated for that purpose; for a long series of years he has been in the habit of receiving the visits of students of the microscopical branches of Natural History and of Palæontology, and of exhibiting to them his extensive collections in those departments of science for their instruction and amusement.

Having received so much benefit in early life from his association with the Mathematical Society, he was a strong advocate for the establishment of similar ones. He took an active part in the foundation of the Microscopical Society, and was one of the original members of the Entomological Society. In 1844, in conjunction with Dr. Johnston, of Berwick-on-Tweed, he established the Ray Society, and acted as its treasurer for many years. In 1847 he proposed and founded the Palæontographical Society, and filled the office of its honorary secretary until very recently.



WILLIAM ALLEN MILLER, M.D., LL.D., F.R.S.,

PROFESSOR OF CHEMISTRY, KING'S COLLEGE, LONDON.

THE subject of this memoir was born at Ipswich, on the 17th of December, 1817. After having left his mother's care, to which he was much indebted for his earliest lessons, the training of William Allen Miller was for some time somewhat desultory. His parents being members of the Society of Friends, he was sent for two years to the Quakers' school at Ashworth, in Yorkshire. Here he appears to have received his first lessons in science;—lectures on chemistry and some other branches of physics having been occasionally delivered in the establishment by one of the masters. Subsequently to this, two years were spent under the care of a private tutor, and at the age of fifteen, William Allen Miller was apprenticed to his uncle, Mr. Bowyer Vaux, one of the surgeons of the General Hospital at Birmingham. He remained with his uncle for five years, having all the advantages which are offered to a young medical man by a large public establishment of this class. Already, having a taste for chemical inquiry, it will be well understood that the opportunities presented by a well-furnished dispensary were not neglected by the thoughtful young man. We know not whether he derived any advantages from the lectures on science, which have always been from time to time delivered in Birmingham. Certain it is that the society into which he was thrown had not yet lost the spirit of inquiry which had been infused into it by Watt, Bolton, Priestley, Wedgwood, and others, and exerted a powerful influence on the young and impressible mind. Up to this time William Allen Miller had no idea of departing from the line of life which his friends had marked out for him, and he steadily and earnestly devoted himself to the

profession of physic. To complete his medical education, he entered King's College, London. At that time Professor Daniell occupied the chair of Chemistry in that establishment, and young Miller was soon drawn within the sphere of that influence, which many remember with pleasure. His natural and cultivated taste for experimental science, soon led him to devote much time and attention to chemistry. The pleasing and satisfactory manner in which Professor Daniell conducted his class served eventually to concentrate his mental powers almost entirely on this science. One of those apparently accidental circumstances, which so frequently settle a man's position in life, now occurred, and determined Mr. Miller's future career. Professor Daniell's assistant fell ill, and this gave Mr. Miller the opportunity of making himself useful to the Professor. The result of his being thus brought into closer contact with Daniell was the establishment of a warm friendship. The laboratory of King's College was free to Mr. Miller, and he had every possible aid from the Professor in the investigations which he was now enabled to pursue. In 1840, Mr. Miller, with a view of extending his knowledge of analytical methods, spent two months with Liebig at Giessen. In 1841 the appointment of Demonstrator of Chemistry in King's College was made, and Mr. Miller was selected for that office on the recommendation of Professor Daniell. This position established, at once and for ever, the profession to which his future life was to be devoted. As demonstrator, Mr. Miller worked with much assiduity and great success for four years, winning, by his attention to the students, his agreeable manners, and the clearness with which he illustrated his science, the favourable opinions of all with whom he came in contact. About this time he took his M.D. degree in the University of London. In 1845, he was elected a Fellow of the Royal Society; and in the same year, on the death of Professor Daniell, Dr. Miller was appointed to succeed that eminent chemist. Previously to the death of his friend and scientific instructor Professor Daniell, Dr. Miller, who had long assisted, was immediately associated with him in a paper "On the Electrolysis of Salts," which was published in the *Philosophical Transactions* for 1844. In 1845, we find in the '*Philosophical Magazine*' a paper, by Dr. Miller, "On the Spectra of Coloured Flames, and Absorption Spectra of Coloured Gases." This paper may be referred to as originating those beautiful investigations, by spectrum analysis,

which have led to the discovery of the metals Rubidium, Cæsium, and Thallium, and as opening the way to that inquiry, which has advanced our knowledge of the physical condition of the sun's surface. Without in any way detracting from the value of the discoveries of Bunsen and Kirchhoff, we cannot but feel that Dr. Miller has a claim, which has been to a great extent passed over, to a considerable share in the development of those new and important truths. Many of those phenomena which have recently been described as new discoveries connected with the bright lines of the spectra of coloured flames, and the absorptive power of certain gases, were more than indicated in Dr. Miller's paper in 1845.

Professor Miller most assiduously devoted all his powers to the duties of his office, and consequently left himself but little time for original investigation. This is to be regretted, for every subject which he has taken up has been fully elucidated by his labours. His accuracy as a chemist has led to his being appointed member of several important commissions. One of these was the inquiry connected with the building stones used in the Houses of Parliament. In 1851 he was one of the Government Commissioners to report on the water-supply of the metropolis, in which inquiry he was associated with Professor Graham and Dr. Hofmann. Professor W. A. Miller confined his attention for a considerable period to the production of his well-known work, 'Elements of Chemistry, Theoretical and Practical,' which was published in the years 1855, 1856, and 1857. Two editions of this important book have been exhausted, and a third edition is, we understand, now passing through the press. Professor Miller was President of the Chemical Society in 1856 and 1857, and he has presided over the Chemical Section of the British Association for the Advancement of Science on two occasions,—at Liverpool in 1854, and at Manchester in 1861. In 1861, when Lord Brougham was installed as Chancellor of the University of Edinburgh, the honorary degree of LL.D. was conferred on the King's College Professor. As one of the Vice-Presidents of the Royal Society, he had so carefully attended to the interests of that important body, that he was, in 1861, on the nomination of General Sabine to the Presidency, appointed Treasurer. For the last thirteen years Dr. Miller has been one of the Assayers to the Mint, and he is at this time a member of a commission appointed by the

War Office, and under the Presidency of General Sabine, to inquire into the practical value of gun-cotton to the army.

It will be evident from what we have stated, that William Allen Miller has been one of those useful men of science, who, without dazzling by their brilliancy, secure the admiration of mankind by their zealous desire to advance our knowledge of the truth. His earnestness in search of truth has been tempered by a religious fear lest he should be led away from it, by the natural tendency of every reflecting mind to escape from the trammels of fact to the freedom of hypothesis. Many chemists have advanced the philosophy of the science more extensively than Dr. Miller has done, but few have secured by their care, and consequent accuracy, a larger share of that confidence which is above all things of value to the investigator.

Amongst the most recent investigations undertaken by Professor Miller, we have evidence of the power to which we have alluded. In the Philosophical Transactions for 1862 is a paper by him, "On the Photographic Transparency of Bodies, and on the Photographic Spectra of the Elementary Bodies," and in the 'Journal of the Pharmaceutical Society' for the same year is a lecture "On Spectrum Analysis," which most satisfactorily deals with the whole question, and should be consulted by all who are desirous of learning the importance of this beautiful method of interpreting Nature, and of understanding the value of its exquisitely delicate indications. The latest labour of the chemist whose life and labours we have endeavoured to sketch, appears in a paper, the joint production of himself and Mr. William Huggins, which was read before the Royal Society towards the close of the last session, and which is now passing through the press. This paper is entitled "On the Spectra of the Fixed Stars," and it proves to us that those orbs which are so remote in space, as almost to defy the power of the astronomer to determine their distance from the earth, are brought by Spectrum Analysis within the grasp of the chemist, who is thus enabled to inform us what metals are undergoing change upon their surfaces, and pouring forth that energy which reaches us in the form of light.

MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART.

PORTRAITS
OF
MEN OF EMINENCE

IN LITERATURE, SCIENCE, AND ART,

WITH

Biographical Memoirs.

THE PHOTOGRAPHS FROM LIFE, BY ERNEST EDWARDS, B.A.

“The glorious sun
Stays in his course and plays the alchymist.”—*Shakespeare.*

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THOMAS GRAHAM, M.A., D.C.L., F.R.S.,

MASTER OF THE MINT, LATE PROFESSOR OF CHEMISTRY, UNIVERSITY
COLLEGE, LONDON.

THOMAS GRAHAM was born in Glasgow on the 20th December, 1805. His father, Mr. James Graham, of Balewan, county Stirling, was a merchant and manufacturer in that city. He passed through the ordinary routine education of a youth in the Glasgow Grammar School; and in October, 1819, being then fourteen years old, he was entered as a student in the University of that city. Five years after this, Thomas Graham took his M.A. degree; he still continued his studies, and especially devoted his attention to mathematics and physical science, under the guidance of Professors Thomas Thomson, Meikleham, and others, who have left their names attached to the sciences which they promoted and taught. Mr. Graham then removed to Edinburgh, where he remained for two years, enjoying the friendship and benefiting by the counsel of Dr. Hope and Sir John Leslie. In 1828, Mr. Graham established a laboratory for the practical study of chemistry in Portland Street, Glasgow; and followed Dr. Clark as lecturer to the Mechanics' Institution, which was then recently established. In 1830, he was appointed by the trustees of the Andersonian University of Glasgow as their Professor of Chemistry. For seven years Professor Graham was an industrious teacher of his science, and a most zealous investigator of chemical phenomena. From a list of nineteen of his contributions to Scientific Journals and the Transactions of Learned Societies, which now lies before us, we select a few, for the purpose of showing the variety and the character of his researches. In 1826, he published a paper "On the Absorption of Gases by

Liquids;” in 1829 another, bearing the title of “Experimental Researches on the Miscibility of Gases, and their Separation from each other by Mechanical Means,” which was followed by a notice of the passage of gases through animal membrane,—these clearly leading this acute observer to the development of the “Law of Diffusion of Gases,” which appeared in the twelfth volume of the Edinburgh Transactions, and received the Keith prize of the Royal Society of Edinburgh. In addition to the above, we have papers “On the Limit of the Earth’s Atmosphere,” “On the Theory of Nitrification,” “On the Formation of Alcoates,” “On the Phenomena of the Oxidation of Phosphorus at Low Temperatures,” and allied chemical subjects. In 1833, we find, in the Philosophical Transactions, a memoir “On the Arseniates, Phosphates, and Modifications of Phosphoric Acid.” In 1835, in the Fourth Report of the British Association, we have an important paper “On Hydrated Salts and Metallic Peroxides, and on the Doctrine of Isomerism;” while, in 1836, his “Inquiries respecting the Constitution of Salts” was read before the Royal Society, and rewarded with their gold medal. In this year Professor Graham was also elected a Fellow. The value of Professor Graham’s investigations and discovery of a new property of gases, *their transpirability*, was recognized by a second gold medal from the same learned body in 1850.

Previously to this, Professor Graham had satisfactorily elucidated the polybasic character of phosphoric acid, which was the germ of “polyatomicity,” one of the most fertile ideas of modern chemistry.

In 1837, on the death of Dr. Edward Turner, this now eminent chemist was elected, by the Council of University College, London, to their chemical chair, which office he filled with the highest advantages to the College for about eighteen years. During two years of this time he was charged with the duties of Dean of the Faculty, in University College; and for ten years he was chemical examiner in Arts in the University of London. In 1855 he retired from his professional duties, on being appointed by the Crown to succeed Sir John F. W. Herschel, Bart., on the retirement of that philosopher from the important office of Master of the Mint. Some years before this, Professor Graham had been appointed non-resident Assayer to the Royal Mint, in consequence of a change in the administration of that department of the public service, at the time of Sir John Herschel’s advancement to the

Mastership. The duty of the assayer is to submit all bullion presented for coinage at the Mint to scientific examination. This has been found of such essential importance, that a similar office is combined with that of the Director of the Mint in Paris, and in the Anglo-Indian Mints.

To sum up the acknowledgments, by learned bodies abroad, of the high character of Professor Graham's researches, it must be stated that, in 1848, he was appointed a Corresponding Member of the Institute of France; and before, and subsequent to that date, he received honorary degrees from the Academies of Sciences of Berlin, Munich, Turin, and Washington. At home, at the Commemoration of 1855, the University of Oxford conferred upon Professor Graham the degree of D.C.L. He was for six years a member of the Council of the Royal Society, and twice he has held the office of Vice-President.

Although almost constantly engaged in researches which demanded, as it would appear, the sole attention of an unoccupied mind, Professor Graham has found time for many practical duties. He was active in the establishment of the Chemical Society in 1840, of which he was the first President; and of the Cavendish Society in 1846, over which he has always presided. He acted as Vice-President and Reporter of the Chemical Jury at the Great Exhibition of 1851. In 1846 he was one of a commission to report to the House of Commons on the ventilation of the Houses of Parliament. In 1847 he was commissioned by the Board of Ordnance, with others, to conduct an inquiry into the casting of guns. He was engaged in 1851, with Professors Miller and Hofmann, to report on the chemical quality of the metropolitan water supply; and he has aided the Board of Inland Revenue, in conjunction with other men of science, by reports on several important subjects connected with trade and manufacture.

Of a still higher class than any of the investigations which we have named, are those which have been published by Professor Graham during the last few years. The paper "On Liquid Diffusion applied to Analysis," published in the *Philosophical Transactions* for 1862, contains the discovery of *Dialysis*, for which the Copley Medal of that year was awarded, and for which the English chemist received also one of the prizes of the French Institute. In this paper, Mr. Graham establishes a new department of *Colloid Chemistry*, which promises to open out to us a new road by which

inquiries into the animal economy may be pursued. A "*colloid*" may be explained to be "organic matter without special form," of which gelatine may be regarded as the type. This is a form which matter must assume before it can enter into the structure of organized beings, whether plants or animals. Opposed to the colloidal is the crystalline condition; therefore, substances affecting the latter form are called *crystalloids*. "The *colloidal* is, in fact, a dynamical state of matter; the *crystalloidal* being the statical condition. The colloid possesses *ENERGIA*. It may be looked upon as the probable primary source of the force appearing in the phenomena of vitality." Although it is scarcely possible, within the limits of our space, to convey any satisfactory idea of the importance of these discoveries, we hope we may have shadowed out the promise which they give of leading to a far more intimate knowledge of molecular physics than we have hitherto possessed, and of enabling us to investigate the complicated phenomena which belong to matter when brought under the power of vital action. "On Capillary Liquid Transpiration in relation to Chemical Composition" is the title of another paper which appeared in the same year, and which was a further development of these new views.

In 1863 a paper "On the Molecular Mobility of Gases" was published in the Philosophical Transactions. This was a great extension of the previous researches of our most philosophical chemist, which appeared in the Transactions for 1846 and 1849. The separation of gases by capillary transpiration is clearly made out, and the subject of diffusion rounded off in a most satisfactory manner. The following paragraph conveys concisely and clearly the laws established by those inquiries:—

"The diffusive mobility of the gaseous molecule is a property of matter fundamental in its nature, and the source of many others. The rate of diffusibility of any gas has been said to be regulated by its specific gravity, the velocity of diffusion having been observed to vary inversely as the square-root of the density of the gas. This is true, but not in the sense of the diffusibility being determined or *caused* by specific gravity. The physical basis is the molecular mobility. The degree of motion which the molecule possesses regulates the volume which the gas assumes, and is obviously one of the causes, if not the only one, determining the peculiar specific gravity which the gas enjoys. If it

were possible to increase in a permanent manner the molecular motion of a gas, its specific gravity would be altered, and it would become a lighter gas."

It will be evident to every reflecting mind that this touches very closely the foundation of our atomic views. Indeed, in this year (1863) Professor Graham communicated a paper to the Royal Society, entitled "Speculative Ideas respecting the Constitution of Matter," to which we must refer the reader, it being impossible to give satisfactorily, in a condensed form, the philosophy of the hypotheses involved. In June of the present year (1864) the Proceedings of the Royal Society contains the notice of another memoir, "On the Properties of Silicic Acid and other analogous Colloidal Substances," in which the investigation of the colloid state is continued and greatly extended.

Such are the inquiries upon which the subject of this memoir has shed a large amount of light. No investigation has been hitherto more obscure than that of molecular constitution. Ever since the attention of men of science was called by Dutrochet to the phenomena of Endosmosis and Exosmosis, chemists and physiologists have, at different times, endeavoured to define the laws that regulate those actions, which were regarded by many as proceeding from a force that had not previously been recognized. Mr. Graham has given us a distinct idea of the steps of this strange and important operation.

We have never before received so satisfactory an explanation of the familiar, though obscure, phenomena of solution, as that given us in the memoirs dealing with *Diffusion*, and, under the general head of *Osmotic Force*, we find now satisfactorily grouped many of those phenomena which were the subjects of much erratic speculation and vague hypotheses.

In presenting the Copley Medal to Mr. Graham in 1862, the President of the Royal Society concluded his address in the following words, which aptly put the importance of this new chemical process, *Dialysis*, to one almost untouched department of scientific inquiry:—

"In the examination of organic mixtures for poisons which, like the vegetable bases, are crystallizable, it will afford the most valuable aid, as it separates the poison without adding anything except a little pure water. Many organic colloids, such as gum, albumen, or caramel, may, by its means, be readily freed from saline

impurities, which can scarcely be removed by any other known means. Its application to the recondite processes of secretion, and to many of the chemical changes taking place in the living organism, need not be insisted on. The door thus opened to further inquiry will, no doubt, be eagerly entered by the physiological chemist, who can hardly fail of obtaining new insight into the obscure but deeply important operations of the nutrition, reparation, and removal of tissue."



THOMAS BELL, F.R.S., ETC.

IN the first part of the 'History of Dorsetshire,' now in course of publication, there appeared the following brief notice of the subject of this memoir:—

“ Professor Thomas Bell, a distinguished living naturalist, was born at Poole, October 11, 1792. He is the only son of the late Mr. Thomas Bell, who for many years practised physic in the town of Poole. Being destined to follow his father's profession, Mr. Bell entered, in 1814, as a student at Guy's Hospital, London. In the following year he became a Member of the Royal College of Surgeons of England, and in 1816 was appointed Lecturer on Dental Surgery at Guy's Hospital, and subsequently on Comparative Anatomy. From that time to the date of this notice (1861), Mr. Bell has lectured continuously at Guy's Hospital, that is, over a period of forty-four years; a tenure of office as a public teacher longer than that held by any other lecturer or professor in the metropolis. He was elected in 1815 F.L.S., and in 1820, F.G.S.; in 1828, F.R.S., and in 1836 he accepted the Professorship of Zoology at King's College, London, which chair he at present fills.

“ His writings, commenced early in life, are very numerous and of great scientific value.

“ Mr. Bell was one of the original founders of the scientific section of the Zoological Society of London, and for eleven years its Vice-President. In 1844 the Council of the Royal College of Surgeons conferred on him the honorary degree of Fellowship of that College. In 1848 he was elected Secretary to the Royal Society, which he resigned in 1853, on being elected President of

the Linnean Society. Professor Bell has been four years Vice-President of the Royal Society, viz. 1853-4, 1858-9."*

The foregoing summary, which appeared in Hutchins's 'History of Dorsetshire,' under the head, "Eminent Persons, Natives of Poole," is necessarily short and imperfect.

Mr. Bell's professional education was originally commenced with the view of his joining his father in the general practice of the medical profession in his native town; but circumstances occurred, towards the close of his hospital studies, which induced him to adopt that special branch of surgery—Dental Surgery—which he has since done so much to elevate, both as regards its scientific literature, and its grade as one of the specialities of surgery.

Mr. Bell's scientific pursuits were commenced in early life, indeed in childhood; and some forty years before the now familiar aquariums came into existence, the youthful naturalist on the Dorsetshire coast had already isolated in basins and glasses little seas full of Actineæ and Sponges and Polyps, for purposes of zoological observation. Indeed, the first of Mr. Bell's published scientific papers, though put forward long subsequent to the time we are referring to, was based upon investigations thus carried on. In the first volume of the 'Zoological Journal,' published 1825, there appeared a little memoir written by Mr. Bell, "On the Animal Nature of Sponges," in which he showed, what had not as yet been known, the tubular circulation in these bodies. A discourse "On the Structure and Use of the Submaxillary Odoriferous Glands in the Genus *Crocodylus*," was published (1827) in the 117th volume of the Phil. Transactions of the Royal Society; immediately upon which Mr. Bell was elected a Fellow of that distinguished body.

In the first volume of the Transactions of the Zoological Society (1833), Mr. Bell described the particulars of an interesting discovery relative to the cervical and upper dorsal vertebræ of the Three-toed Sloth (*Bradypus tridactylus*). This curious animal had been considered an exception to the otherwise universal law that seven elements constitute the vertebræ of the mammalian neck. The three-toed sloth was supposed and described as possessing nine cervical vertebræ; but Mr. Bell, in the paper referred to, showed

* 'The History and Antiquities of the County of Dorset,' by John Hutchins, M.A. (3rd edit. fol. Westminster, 1861), vol. i. p. 67.

that the eighth and ninth supposed cervical vertebræ were in reality the first and second dorsal, and that small detached bones, the homologues of ribs, were associated with them,—thus establishing the exceptionless law as to the number of cervical vertebræ in the Mammalian class.

It is needless for us to enumerate individually the several scientific papers and treatises of which Mr. Bell has been the author. They have been uniformly of an original character. Agassiz, in his 'Bibliographia,' cites the titles of thirty-four of them; and several others have appeared since that list was compiled, and all, it should be remembered, were written, and the observations leading to them were made, in the brief intervals of an active and laborious professional practice. Without specializing all, we may however mention the beautiful—indeed splendid, though incomplete—'Monograph on the Testudinata,' the publication of which in folio was commenced in 1833: the large, and in all cases life-size figures which adorn this treatise are probably unequalled in any illustrations of Herpetology, and, as works of art, have few equals in natural-history figures, and none that surpass them. Though this monograph did not extend beyond eight parts and about forty plates, it was a valuable and generous offering to natural-history literature; and in the latter sense we may add (without, we trust, impropriety or breach of confidence) that the publication, undertaken not with any idea of pecuniary return, entailed the heaviest outlay on its author, which a necessarily narrow circulation of the work has never in any way met.

Mr. Bell has been a large contributor to that valuable series of 'British Natural History' which has been published by Mr. Van Voorst. 'The British Quadrupeds' (1837), 'British Reptiles' (1839), and 'British Stalk-eyed Crustacea' (1847), were from Mr. Bell's pen, and have long been the standard works on the subjects of which they treat. Two of them have arrived at a second edition.

Much of Mr. Bell's natural-history work has been done for the assistance of, and in association with others, to illustrate some special branches in science with which he has been most familiar. Thus he assisted in starting, and was long joint-editor of, the 'Zoological Journal,' to which he was a frequent contributor. The descriptions, etc., of the Reptilia in the Zoology of 'Darwin's Voyage in the Beagle' are from Mr. Bell's pen. A memoir 'On

the Crustacea found by Professor E. Forbes and Mr. M'Andrew in their Cruise round the Coast,' is also by him.

Mr. Bell was associated with Professor Forbes in the translation of Burmeister's 'Trilobites' for the Palæontographical Society, and with Professor Owen in another work for the same Society, on the 'Chelonia of the London Clay.'

Mr. Bell has taken advantage of those rich stores of palæozoic forms which extended geological research has of late years placed in the hands of naturalists, for the purpose of working out and extending his critical knowledge of Carcinology, and his 'Fossil Decapod Crustacea of the London Clay,' followed by the 'Crustacea of the Greensands and Gault,' are part of the results of these labours. He is now preparing a further memoir on the 'Crustacea of the Chalk.'

Mr. Bell, in early life, formed a considerable natural-history museum, especially of Testudinata; and his collection of Decapod Crustacea, more recently made, was one of the most complete ever brought together. It is now in the Museum at Oxford.

In the formation of the Ray Society (1844), Mr. Bell took an active part, and was its first President; which post he occupied till succeeded by Sir Philip Egerton in 1859.

With regard to the learned Societies which have elected Mr. Bell into their membership, besides those already mentioned, we may particularize the following:—Academy of Sciences of Philadelphia (1834); Philomathic Society of Paris (1836); Natural History Society of Boston, U.S. (1837); Academia Cæsar. Leopold. Carol. Naturæ Curiosorum (1853); and the Hungarian Academy of Literature and Science (1859).

Mr. Bell's election to the Secretaryship of the Royal Society, in 1848, occurred under peculiar circumstances, which deserve a passing notice. It had been customary that the two Secretaries of the Royal Society should represent respectively those two sections of *Natural Knowledge*—the *fixed sciences* and the *natural sciences*, which it is the province of the Society to advance. The learned physiologist, whose retirement from the secretaryship led ultimately to Mr. Bell's election, had ably represented, in his office, the natural sciences, whilst the other secretaryship was filled by a distinguished physicist and mathematician as the representative of the fixed sciences. In proper and usual order a naturalist would have been expected to replace the outgoing Secre-

tary. The Council of the Royal Society, however, supported by an active and influential number of Fellows, nominated by majority for the Society's election a gentleman of great attainments, and eminently fitted to fill the vacant post which was the object of so much honourable ambition, but whose qualifications as a man of science were those of a chemist and physicist. The large and important section of the Royal Society, whose scientific pursuits were those of Natural History in its various branches, resented what appeared to them a one-sided and unfair predominance of official appointment in the Society, to their disadvantage. Opposition to the Council's nominee was determined upon, wholly without Mr. Bell's knowledge, and after some hesitation he consented, at the eleventh hour, and at the earnest appeal of his scientific friends, to act, if the Society should think proper to elect him. This distinction was not only entirely unsought, but altogether unexpected by Mr. Bell. The contest, which was carried on with great keenness and energy on both sides, probably without parallel in the history of the Society, terminated in Mr. Bell's election to the Secretaryship by a majority of forty-seven. But it was a contest entirely of principle; and, acquainted as we were at the time with all its particulars and results, we may say that the issue of the election never disturbed the mutual friendship and regard of those who were principally concerned in it.

Probably in nothing has Mr. Bell done better service to science than in his administration of the Linnean Society during the eight years—from 1853 to 1861—that he was its President. It must certainly be conceded that upon his assumption of the Presidency the Linnean Society was a little drooping; its income was below a healthy standard; its meetings were insufficiently attended; and its literary issues were hardly in keeping with the character and objects of so learned and distinguished a body. During Mr. Bell's tenure of office a very marked improvement occurred in all these particulars. As regards the exchequer of the Society, we may mention that he gave a handsome donation to its funds; and defrayed at his own cost the charge of expensive illustrations of a paper on the 'Leucosiadæ,' published in the Transactions of the Society.

In 1857 the apartments of the Linnean Society were transferred from certain rooms in Soho Square (rented by the Society), to a portion of Burlington House, allotted to the Society free of charge

by the Government, on the same footing and in association with the Royal Society, transferred at that time to the same location from Somerset House. We believe that Mr. Bell was mainly instrumental in obtaining these rooms for the Linnean Society at Government expense.

In closing this little memoir, there is one circumstance we must not omit to notice, and which will be read with interest, indeed with gratulation, by every naturalist. In 1844 Mr. Bell became the possessor by purchase of the little demesne in Hampshire known as "The Wakes" of Selborne, immortalized as the home of Gilbert White, where that charming writer and close observer wrote his 'Natural History of Selborne.' It would have been impossible to have chosen a more suitable proprietor for this beautiful little property, with its most interesting and much-cherished associations. The place had already been a good deal modified, in very questionable taste, when it passed into Mr. Bell's possession, and the hands of the spoiler might soon have obliterated those reliques of White which still remained in the house and about the grounds. While beautifying and restoring his new country residence, it was one of Mr. Bell's chief objects to bring back "The Wakes" as far as possible to its condition when the home of him who had rendered Selborne so famous, and to protect every relique of the old naturalist from injury or decay. And the writer of this notice has himself but very recently seen with what scrupulous care and solicitude Mr. Bell conserves all the reminiscences of Gilbert White, whilst prosecuting, in kindred spirit, the same pursuits as his predecessor, and like him enjoying his rural retirement in literary ease and social usefulness.



DAVID THOMAS ANSTED, M.A., F.R.S., ETC.

DAVID THOMAS ANSTED, the subject of this memoir, was born in London, on the 5th of February, 1814, and received the rudiments of education in a school, where he remained till about fifteen. Exhibiting some aptitude for mathematical and physical science, he was soon afterwards transferred to a private tutor, and prepared for the University of Cambridge, where he was entered at St. John's College in 1832. On his arrival at that college, he was advised to remove to a smaller college, and migrated to Jesus College, where he attended the regular courses of lectures, and prepared for the examination in mathematical honours. During the last year of his residence at college, his health failed, and decided symptoms of phtthis rendered it impossible that he should continue his studies as before. He recovered, however, so far as to go in for examination at the usual time, and in 1836 he passed as thirty-second Wrangler, and took his B.A. degree.

Very soon after taking his degree, Mr. Ansted began those studies in geology which have since entirely occupied his time. Led originally by the attraction of Professor Sedgwick's lectures to the pursuit of geology, he soon became intimate with that great teacher, and on more than one occasion accompanied him in the field. In the year 1838 he was elected F.G.S. At first his attention was drawn to palæontology, and in the year 1839, two memoirs by him were published in the Cambridge Philosophical Transactions, one on a new genus of multilocular shells, from the slates of Cornwall, and the other on the Tertiary Formations of Switzerland. During the summer of 1838 he had spent some months at Lausanne, and visited the Jura, and thus had acquired material for the latter paper. The former was a discovery in which he had been anticipated. In 1839 he visited Bohemia, and the result of his investigations was communicated to the Geological Society.

While resident at Cambridge, Mr. Ansted was occupied partly in preparing for arrangement the great collections made by Professor Sedgwick, and removing them to the new museum in course of construction under the New Library wing, and partly in accumulating material for his 'Geology' (2 vols. 8vo), published in 1844. In 1840, however, Mr. Ansted succeeded Professor Phillips in the chair of Geology at King's College, London, and very soon afterwards, on the death of Professor Daniell, he undertook the lectureship on geology at the East India Military Seminary at Addiscombe, which he held till that institution was done away with by Government, on the breaking up of the East India Company as a political body. Meanwhile he had been elected F.R.S., and in addition to his work at the Woodwardian Museum in Cambridge, had published from time to time various papers and notices in scientific journals. He had also been elected a Fellow of Jesus College, and had acted as pro-rector, and afterwards as one of the examiners for ordinary degrees in the University.

Early in 1845 Professor Ansted left Cambridge as a residence, having been elected Vice-Secretary of the Geological Society. He here succeeded his friend, the lamented Edward Forbes, and was appointed to edit the new and enlarged record of the Proceedings of the Society, which, since that time, under the name of 'Quarterly Geological Journal,' has formed a thick annual volume, superseding the more costly Transactions that had till then appeared. In the autumn of the same year he acted with Mr. Hopkins as one of the local secretaries of the meeting of the British Association in Cambridge, and was afterwards a member of the London Council of the Association.

During the years 1845 and 1846, in addition to his literary work at the Geological Society, and his lectures at King's College and Addiscombe, Professor Ansted was appointed lecturer at the College of Civil Engineers, at Putney. He also published some pamphlets in reference to coal-working, and visited the Newcastle coal district, with a view to investigate the subject of accidents in mines. The result was a pamphlet, and a communication read at a meeting of the British Association. During the year 1846 he was also engaged in reference to the water supply at Liverpool, and from time to time by his evidence before Parliamentary Committees of both Houses, supported the Bill successfully advocated by the corporation of Liverpool, to carry out Mr. Hawkesley's plan.

From 1846 onwards for several years, Professor Ansted was very actively engaged in economic applications of geology,—visiting America and the West Indies several times, and examining most parts of Europe with a view to mining, and other departments of industry in which a knowledge of geology was desirable. During this time, however, his pen was not idle. In 1847 appeared the first edition of the ‘Ancient World,’ followed in 1848 by a second edition. In 1849 appeared the ‘Gold-seeker’s Manual,’ at the moment when the recent gold discoveries of California seemed to demand some work of the kind, and in 1850 the ‘Elementary Course of Geology, Mineralogy, and Physical Geography,’ of which a second edition was published in 1856. Intended for serious use in colleges and for self-education in geology, this latter treatise is too full to be popular, but it is believed to have answered a good purpose, especially in reference to the Indian officers, who were thus supplied with details not easily accessible in a foreign country, and in a portable form. In 1851, on the occasion of the Great Exhibition, Professor Ansted acted as a superintendent of classes 1 and 27 (minerals and mineral manufactures), and was the reporting juror in the latter class, and delivered a lecture on the subject, afterwards published by the Society of Arts. The geological department in the gardens of the Crystal Palace at Sydenham was laid out under his superintendence, when the building of Hyde Park was transplanted to its new site.

In 1852 appeared a ‘Manual of Geographical Science,’ in two volumes, 8vo, of which the chapters on “Physical Geography” were by Professor Ansted. In the autumn of that year he went to America to examine the great coal-fields of Western Virginia and the gold deposits of the eastern part of the same State, and was the author of three letters in the ‘Times’ (afterwards published in a separate form), foreshadowing some recent events in reference to slavery and the slave States. These with other notes of travel appeared in an octavo volume, under the title ‘Scenery, Science, and Art,’ published in 1854. Proceeding in 1854 to the United States and the West Indies, to examine copper-mining districts in Tennessee and in the interior of Cuba, and afterwards to St. Domingo for the same purpose, he was enabled to add to the stock of information on those countries, and some memoirs by him in reference to them were published in the ‘Quarterly Geological Journal’ in 1856. For some years previous to 1856

he had been engaged in mining operations in the south of Spain, in the Sierra de Gador ; and in the winter of that year, while resident for a time at Malaga, he obtained material for an account of the geology of Andalusia, which was also published in the 'Quarterly Geological Journal.' In the year 1855 had been published a volume by him, entitled 'Geological Science,' prepared for 'Orr's Circle of the Sciences.' In 1857 he again proceeded to the West Indies. On this occasion, however, he was not so fortunate as usual. Attacked on his return to Havana by the yellow fever, and treated on the Spanish system of bleeding and purging, he narrowly escaped with life, and his constitution being greatly shaken, he was obliged to give up for a time active prosecution of his profession. He retired to Guernsey, where he remained four years. During this time, however, besides frequent contributions to periodicals and occasional lectures in the Island, he continued his lectures at Addiscombe, served as a member of a commission on the state of the stone of the Houses of Parliament, and published 'Geological Gossip,' a collection of memoirs on geological subjects. He also took advantage of his position in the islands to collect materials for a work published in 1862 on the 'Channel Islands'—a beautifully illustrated volume, in which the islands are treated exhaustively, with the aid of local naturalists, archæologists, and artists. The historical chapters of this work are by Dr. R. G. Latham.

In the spring of 1862 he visited a singular Tertiary coal-field in Hungary, and, besides memoirs on the subject, he published a volume of travels, entitled 'A Short Trip in Hungary and Transylvania.' In 1863 he visited and published an account of the Ionian Islands. In the same year he was appointed to the "Rede" lectureship in the University of Cambridge, and delivered a lecture, since published, 'On the Correlation of the Natural History Sciences.'

Professor Ansted is a corresponding member of the Royal Academy of Sciences of Liége, Master of Arts of the University of Cambridge, Honorary Fellow of King's College, London, Fellow of the Royal, Geological, and Royal Geographical Societies, and member of the Cambridge Philosophical Society.



EDWIN LANKESTER, M.D., F.R.S.

DR. EDWIN LANKESTER was born at Melton, in the county of Suffolk, on the 23rd of April, 1814. He received his early education in the town of Woodbridge, to which place his mother removed after the death of his father in 1819. In this town he became the pupil of Mr. Samuel Gissing, a surgeon. In 1835 he entered as a student at University College. In 1837 he passed his examinations at Apothecaries' Hall and the Royal College of Surgeons. In 1839 he visited the Continent, and graduated at Heidelberg. The same year he returned to London, and commenced practice as a physician. In 1841 he passed his examinations at the Royal College of Physicians. He shortly after accepted the appointments of Lecturer on *Materia Medica* and *Therapeutics*, and of *Botany*, at the School of Medicine adjoining St. George's Hospital. He subsequently accepted the Chair of *Physiology* in 1858, and of the *Practice of Medicine* in 1859. He retired from the School in 1860. He was elected a Fellow of the Royal Society in 1846. He was one of the founders of the Ray Society for the publication of works on *Natural History*, and was its secretary from 1844 to 1862. He became an early attendant of the meetings of the British Association for the Advancement of Science, and held the office of Secretary to the Section of *Zoology* and *Botany* from 1840 to 1861. He was made Vice-President of the Section at the Cambridge meeting in 1862. He was well represented at the Bath meeting in 1864 by his eldest son, Mr. E. Ray Lankester, who read two papers, one on the genus "*Pteraspis*," in the Geological Section, and the other on the "*Anatomy of the Earth-Worm*," at the Natural History Section.

On the retirement of Dr. Lyon Playfair from the Science and

Art Department of the Government, Dr. Lankester was appointed Superintendent of the Animal Product and Food Museums at South Kensington. In this position he delivered several courses of lectures, illustrative of the contents of collections under his management. Two courses of these lectures have been published,—one on Food, in 1861; and the other on the Uses of Animals to Man, in 1862. Dr. Lankester was requested to resign his position at the Museum, on his election as Coroner for Middlesex in 1862. In 1860 he was appointed Examiner in Botany, in connection with the Science Examinations of the Science and Art Department, an appointment which the Government withdrew in 1864.

From the year 1836 to the present time Dr. Lankester has been an extensive contributor to the popular medical and scientific literature of the day. His contributions to the various medical and scientific journals and magazines would fill many volumes. In 1841 he commenced writing for the 'Penny Cyclopædia,' and from the letter R to the end of the second Supplement wrote the whole of the Botanical articles, and many of those on Physiology and Biography. He afterwards edited the Natural Science Department of the 'National Cyclopædia.' On the reissue of the 'Penny Cyclopædia' as the 'English Cyclopædia,' in 1854, he undertook the editorship of the department of Natural History, rewriting a fifth of the whole of the articles.

In 1849, Dr. Lankester published a translation of Schleiden's 'Principles of Scientific Botany;' and in 1857 he translated, for the Sydenham Society, Küchenmeister's work on 'Human Parasites.'

In 1855, he received her Majesty's command to edit a Natural History of Dee Side, which had been left in manuscript by the late Professor Macgillivray, and purchased by her Majesty. In this work he wrote, at the request of his Royal Highness the late Prince Albert, a chapter on the Red Deer. This is one of the most valuable contributions on this subject extant, being the result of inquiries made into the natural history of the Red Deer both in this country and the Continent.

As a Dispensary Physician in London, having been attached to the Royal Farringdon Dispensary in the City, and the Royal Dispensary at Pimlico, Dr. Lankester has had extensive experience of the causes of death and disease amongst the crowded popula-

tions of London. He early took an interest in the sanitary movement, and has delivered popular lectures on subjects connected with public health. In conjunction with Dr. Letheby in 1860, he wrote the article "Sanitary Science" in the 'Encyclopædia Britannica.' In 1856 he was appointed Medical Officer of Health of St. James's, Westminster, and has now published eight annual reports on the subject of his labours as health-officer in that parish.

Dr. Lankester has a popular style of lecturing, and has delivered courses of lectures on various Natural History and Physiological subjects, in the Royal Institution of Great Britain, the London Institution, the Royal Institution of Manchester, the Midland Institute at Birmingham, and other similar institutions. He has also delivered a course of lectures on Natural History every year, at New College, London, since its establishment in 1850.

In 1862, at the solicitation of his brethren of the medical profession, he came forward as candidate for the office of Coroner for Middlesex, vacated by the death of the late Mr. Wakley. It was an important contest, as involving the principle whether a medical or legal man was best fitted for the office of Coroner. Mr. Wakley had been the first medical man who had been Coroner for Middlesex, and the question to be decided by the freeholders was whether they were satisfied that the education and habits of the medical man best fitted him for this important public post. After a severe contest, Dr. Lankester was elected by the County, on the 9th of July, 1862. At the end of his first year of office, he felt it his duty to publish an account of his stewardship, and produced a first annual report at the end of the year 1863. In this report, an analysis is made of 1080 cases in which inquests were held, and many important and interesting facts are elicited.

Dr. Lankester married, in 1845, Miss Phebe Pope, by whom he has eight children. Mrs. Lankester has proved an efficient assistant to the Doctor in his various studies. She is well known as a writer in our popular scientific journals, and as the authoress of 'British Ferns' and 'British Wild Flowers.' She is now engaged in the laborious work of writing the general account of the British Plants described and figured in the third edition of 'Smith and Sowerby's English Botany,' which is being edited by Mr. Boswell Syme.

Dr. Lankester's original researches in science have not been

unimportant. In 1840, he published a paper in the 'Annals of Natural History,' on the origin of wood in plants, in which he detailed the result of a large number of experiments in the growth of wood in trees, and opposed the views held by Du Petit Thouars and others on this subject. In the same year, he also gave an explanation of the hygrometric functions of certain Mosses, as illustrated in the structure of *Funaria hygrometrica*. In 1842, he published an account of the Mineral Springs of Askern, in Yorkshire. In this work, he demonstrated that the source of the sulphuretted hydrogen of these waters was the decomposition of water containing sulphates, in contact with organic matter. In this work, he gave the result of a series of chemical experiments on this subject, and showed that sulphuretted hydrogen itself is not injurious to health. At the British Association, held at Plymouth, in 1841, he proved that the source of the sulphuretted hydrogen given off by water brought from the Niger, and the sea off the coast of Africa, was due to the decomposition of the sulphates, and that it had nothing to do with the malaria and malarious fevers of that country. In 1840, '41, and '42, he visited the various sulphureous springs of England, with a view to ascertain the sources of their sulphuretted hydrogen. During these researches, he discovered and described a number of microscopic organisms existing in sulphureous waters. These he described at a meeting of the British Association at Glasgow, in 1840, and afterwards published an account of them in the 'Annals of Natural History' for 1841.

During his connection with the Ray Society, Dr. Lankester edited the Life and Correspondence of John Ray. These were furnished with copious notes, all from his pen, and published in the years 1845 and 1846. In conjunction with Mr. Busk, Dr. Lankester has now edited the 'Quarterly Journal of Microscopical Science' for twelve years. Each of the volumes contains articles from his pen, and he has contributed, from time to time, papers on various subjects requiring microscopical investigation.



JOHN HAWKSHAW, F.R.S., F.G.S.,

PAST PRESIDENT OF THE INSTITUTION OF CIVIL ENGINEERS.

THE great Railway movement of the present age, and the numerous engineering works which have grown almost, as necessities, out of it, has been the means of developing a very remarkable class of men. The character of these works, their magnitude, and the many difficulties which crossed their path, demanded a self-reliant, earnest-thinking, and most persevering class. England has proved herself rich in such, and their works, not only in these islands, but in other parts of the world, have become the monuments by which a late posterity will know them. Amongst the engineers, there are not many to whom a more exalted place will be given, than to the subject of our present memoir.

John Hawkshaw was born in Leeds, in 1811, and he received his education at the Grammar School of that town. Starting into active life about the time when railways were first beginning to excite attention, he resolved that his career should be closely connected with that of the infant giant which has since taken possession of the land. Mr. Hawkshaw was placed as a pupil with Mr. Charles Fowler, who was at that time chiefly engaged in the construction of turnpike roads in the West Riding of Yorkshire. He subsequently became an assistant to that celebrated engineer, Mr. Alexander Nimmo, who was constructing several important public works for the Government in Ireland. In 1831 Mr. Nimmo died, and at the early age of twenty, John Hawkshaw was engaged to undertake the management of the Bolivar Copper Mines, in South America. This was an office of considerable responsibility, and, the fact of the appointment falling upon so young a man, proved the stability of his character at this age.

Mr. Hawkshaw returned to England after a few years, and he became an assistant to the late well-known engineer, Mr. James Walker. With him he worked most assiduously until 1837, when he was appointed engineer to the Manchester and Bolton Canal and Railway. This was followed soon afterwards by a similar appointment in connection with the Manchester and Leeds Railway. This line formed the nucleus of the widely-extended Lancashire and Yorkshire system, nearly the whole of which railways—embracing many works of considerable magnitude—were constructed by Mr. Hawkshaw.

Those who are acquainted with the railway between Leeds and Manchester, will be enabled to form some idea of the difficult nature of the country, through which many of those lines had to pass. In some districts it became necessary to adopt steeper gradients than had hitherto been attempted to be worked by locomotive engines. The discussions on this point were long continued, and much warmth of feeling was imported into them. Mr. Hawkshaw, however, maintained his position, and proved, in the face of much opposition, the practicability of introducing the steep gradients, and indeed its desirability, even when, by taking circuitous routes, they could be avoided. The correctness of the conclusions of this engineer has been confirmed by the lapse of years, and the views which he so successfully advocated are now universally admitted.

Mr. Hawkshaw has constructed many other railways in different parts of England, and up to the present time he continues to be the consulting engineer of his own—the Lancashire and Yorkshire Railway—and also to the South-Eastern Railway Company.

In Russia, the Riga and Dunaburg Railway was constructed by Mr. Hawkshaw, and to the railway from Dunaburg to Witepok, the works of which are now in active operation, he is the consulting engineer. In India he is connected with the Madras Railway, and the Eastern Bengal Railway. The government of the Mauritius selected Mr. Hawkshaw as consulting engineer to the railways which are now being constructed in that colony.

On the death of Mr. Rendel, the engineering fame which Mr. Hawkshaw had secured, gave him the appointment of engineer-in-chief to the Government Harbour of Refuge at Holyhead, and the other works connected with it. For some time he has also been engaged for the War Office, in constructing the foundations

in the sea at Spithead, for the forts, which are to form an important part of the defences of the Harbour of Portsmouth.

Perhaps there are no works by which this eminent engineer will be better known than those upon which he is now engaged in London. The Charing Cross Railway, although it is only three miles long, involves the necessity of two large bridges across the River Thames. The massive character of the bridge at Charing Cross is such as to give it an almost Egyptian aspect, securing at the same time an appearance of the utmost stability and endurance; the great railway-bridge at Blackfriars is no less grand in the simplicity of its details. It is to be regretted, that it is scarcely possible to find in the same mind great mechanical capabilities, and a perception of the beautiful. Had there not been a considerable absence of the latter in the mind of this eminent man, the inhabitants of London might have escaped the infliction of those unsightly beams of iron, which bridge over many of the best thoroughfares. Mr. Hawkshaw is engineer to the Penarth harbour, dock, and railway, and also to the Hull docks, where he is constructing extensive works, amongst others the Hull South Bridge. The Londonderry bridge in Ireland has just been completed by him.

In 1860 Mr. Hawkshaw was appointed sole Royal Commissioner, to decide between the numerous contending schemes for the water-supply of the City of Dublin. After a lengthened investigation, he recommended a plan, which is now being carried out.

In May, 1862, the failure of the middle level sluice at St. German's, near Lynn, occurred, whereby a large tract of country was flooded, and the safety of the district endangered. The commissioners called Mr. Hawkshaw to their aid, and he succeeded in adopting speedy remedial measures, which have proved successful. Instead of constructing a new sluice, he invented and erected the siphons, for the drainage of the district, which continue to act most satisfactorily.

At the end of the same year, Mr. Hawkshaw visited Egypt at the request of his Highness the late Viceroy, Said Pasha; the object of this visit being to examine into and report upon the practicability of constructing the Suez Ship Canal, for connecting the Red Sea and the Mediterranean. His advocacy of the practicability of that measure as an engineering work is now well known.

Mr. Hawkshaw, from the position which he has secured for himself, is frequently called upon to report, by both the British and foreign governments, upon engineering works and schemes. He was one of the Metropolitan Commissioners of Sewers, when that body was appointed by the Crown, and he is constantly employed as arbitrator between contending parties. This speaks highly for the estimation in which he is held. As a witness before Parliamentary committees, and other tribunals, Mr. Hawkshaw is remarkable for the clearness with which he gives his evidence, and the honesty with which he maintains the opinions which his experience has convinced him to be correct.

On the death of Mr. Cubitt, Mr. Hawkshaw solicited the suffrages of the electors of Andover, desiring to keep the Parliamentary ranks of the engineers complete. He was not returned, his failure being attributed by his friends to the lateness of his appearance in the field. The honour which attaches to a representative man in Parliament, is to be coveted by all high and energetic minds ; but Mr. Hawkshaw may find consolation in the endurance which he has given to his name in structures of stone and iron, which are fine examples of private enterprise and of public usefulness.

Mr. Hawkshaw's life has been too busy for any literary labours of moment ; his only work being "Reminiscences of South America," excepting a few pamphlets on mining and engineering subjects, and some papers read before the Geological Societies of London and Manchester.



SAMUEL HUNTER CHRISTIE, M.A., F.R.S.

SAMUEL HUNTER CHRISTIE, a Mathematical Master and Professor of Mathematics for nearly half a century, in the Royal Military Academy of Woolwich, was born March 22nd, 1784, in Leicester Square, London, in the house adjoining that occupied by Sir Joshua Reynolds. Having exhibited an early taste and talent for mathematical studies, he was placed under the tutorship of Bonnycastle, and his father, on the recommendation of Bishop Horsley, sent him to Cambridge. He was entered at Trinity College, Dr. Mansell, afterwards Bishop of Gloucester and Bristol, being the Master, and was in the first class in his second year's examination. In his third year he obtained a scholarship; and in 1805 he took his degree of B.A., as Second Wrangler. The Senior Wrangler on this occasion was Turton, afterwards Bishop of Ely; and in the Smith's Prize—a prize instituted by Dr. Robert Smith to be given to the two best mathematicians of the year—Turton and Christie were equal. Though assiduous in his studies, Mr. Christie was a great proficient in sport and all kinds of athletic exercise. He was fond of fishing and shooting, and especially boating. The great renown acquired by the Cambridge University Boat Club, may almost be said to have dated from Mr. Christie's aquatic experiences on the Cam, he having been the first to get up a boat's crew to go out regularly. Mr. Christie was also Captain in the University Volunteers in 1803, Lord Palmerston being at that time one of his brother officers.

In 1806 Mr. Christie left Cambridge, and accepted the appointment of Third Mathematical Assistant in the Royal Military Academy of Woolwich, Dr. Gregory being the Second Assistant. Upon entering that institution, he found the state of the mathema-

tical studies at so low an ebb, that his duties seemed likely to be confined, for some time at least, to giving instruction in the simple forms of arithmetic. Four years later, by availing himself of the Lieutenant-Governor's sanction to deviate in some measure from the prescribed course of instruction, he was enabled to effect some marked improvement in the mathematical qualifications of the cadets in the classes under his charge. Subsequently he was called upon by the authorities to describe the changes he considered necessary to be made, for determining the relative merits of the pupils. He strongly recommended that all promotions should be made in the order of the results of competitive examinations, to which he advised that the pupils should be subjected. In 1812 this mode of examination was adopted, and from that time has been used to govern the promotions. Although Mr. Christie continued on all occasions to urge the importance of placing the mathematical instructions of the Woolwich Academy on a footing more in accordance with that given in foreign military schools, it was not until he was promoted in 1838 from the position of First Mathematical Master to that of Professor of Mathematics that he was able fully to carry out his views. He subsequently occupied himself in preparing a new elementary course, the first volume, comprising arithmetic and algebra, being published by the authority of the Master-General and the Board of Ordnance in 1845. A portion of the second volume, containing "The Elements of the Geometry of Planes and Solids," and "The Elementary Principles of Descriptive Geometry and of Isometric Perspective" was published in 1847, but he was compelled by repeated attacks of illness, from proceeding further in the work. In the summer of 1854, after a service in the Royal Military Academy of forty-eight years, Professor Christie retired in the enjoyment of a pension. Though in the discharge of his duties towards his pupils he always maintained strict discipline, still as by this means he avoided the necessity of reports, which would have entailed punishment, he lost nothing of the regard of the well-disposed in the Academy; while among pupils inclined to idleness, instances were not wanting of young men, long after they had obtained their commission in the Ordnance Corps, thanking him for having, as it were, compelled them to work while under his tuition. Professor Christie has been heard to state that throughout the Crimean war, with only two or three

exceptions, every officer in the Engineers and Artillery who had been engaged in that arduous struggle, had been under his instruction in their progress through the Royal Military Academy.

However occupied in the zealous discharge of his duties at the Royal Military Academy, Mr. Christie did not neglect scientific inquiry. About the year 1819, renewed attention had been directed to the effects produced by the iron in a ship on the needle of its compass, in consequence of the great increase which had been found to take place in these effects during some of the recent Arctic voyages. To ascertain whether the views he entertained on the subject were correct, Mr. Christie engaged in an extensive series of experiments; and the results of these he presented to the Cambridge Philosophical Society, of which he was one of the earliest members. His first paper presented to the Royal Society was communicated in June, 1823, by the President, Sir Humphry Davy; and in 1826 he was elected a Fellow. From this time, for several years, he communicated almost annually, as follows:—

1. On the Diurnal Deviations of the Horizontal Needle when under the Influence of Magnets.
2. On the Effects of Temperature on the Intensity of Magnetic Forces; and on the Diurnal Variation of the Terrestrial Magnetic Intensity.
3. On the Magnetism of Iron arising from its Rotation.
4. On the Magnetism developed in Copper and other Substances during Rotation.
5. On Magnetic Influence in the Solar Rays.
6. On the Mutual Action of the Particles of Magnetic Bodies, and on the Law of Variation of the Magnetic Forces generated at different distances during Rotation.
7. Theory of the Diurnal Variation of the Magnetic Needle, illustrated by Experiments.
8. On the Laws of the Deviation of Magnetized Needles towards Iron.
9. Experimental Determination of the Laws of Magneto-electric Induction in Different Masses of the same Metal, and of its Intensity in Different Metals.
10. Improvement in Instruments and Methods employed in Determining the Direction and Intensity of Terrestrial Magnetism.
11. Discussion of the Magnetical Observations made by Captain Back, R.N., during his late Arctic Expedition.
12. Discussion of the Magnetical Observations made by Captain Back, R.N., during his late Arctic Expedition, Part II.

Mr. Christie was elected a Fellow of the Royal Society in January, 1826. Besides the Papers of which the titles have been given, he was the author of several Reports on Papers communicated to the Royal Society, of which Reports several were read at the meetings of the Society.

A letter addressed by Baron Humboldt to H. R. H. the Duke of Sussex, the President of the Royal Society, soliciting the influence of that Society in establishing permanent magnetic observations in addition to those already established through Baron Humboldt's influence, having been communicated to the Council, was referred to the Astronomer Royal and Mr. Christie, to be reported on to the Council. The Report which Mr. Christie drew up, having been approved of by Mr. Airy, was presented to the Council in June, 1836, and read to the Society at the evening meeting of the 24th November following. In their Report, the importance of the objects to be attained by means of permanent magnetical observations is dwelt on, and the President and Council are earnestly recommended to advocate their establishment in accordance with the views of Baron Humboldt. Though this recommendation led to no immediate result, yet it may be considered as the first step towards the establishment of the Magnetic Observatories at the Cape of Good Hope, St. Helena, Hobarton, and Toronto, the magnetical results obtained at which stations have so greatly advanced our knowledge of Terrestrial Magnetism.

Mr. Christie has also taken an active part in the executive of the Royal Society. From 1837 until 1854, he filled the office of Secretary, and moved conspicuously in the establishment of scientific committees of reference, which however are no longer used. Mr. Christie is one of the Board of Visitors of the Royal Observatory of Greenwich; and he was a member of the Committee appointed by the Admiralty, for the improvement of the compasses of the Royal Navy, during which service he tested great varieties of steel and of forms of needles. He was also an early member of the British Association, and contributed some valuable reports on magnetism, at its third meeting at Cambridge, in 1834.

Mr. Christie is a Fellow of the Astronomical Society and one of its Vice-Presidents, and he is a corresponding member of the Academy of Sciences of Palermo, and of the Société Philomathique of Paris.



WILLIAM ROBERT GROVE, Q.C., M.A., F.R.S.

WILLIAM ROBERT GROVE was born at Swansea in the year 1811 ; his father and his grandfather were magistrates, and had been Deputy-Lieutenants for the county of Glamorganshire. Under the care of the Rev. E. Griffith, the young philosopher received, at the Swansea Grammar School, his early education. He was subsequently placed under the charge of the Rev. J. Kilvert, of Darlington House, Bath.

When very young, William R. Grove displayed much of that mechanical ingenuity which in after years was shown in the invention of new forms of apparatus ; and he exhibited when but twelve years of age a fondness for chemical experiments. We have heard an anecdote which, as showing the boy's ingenuity, and consequently thought, is worth preserving. Young Grove had read in a book designed for children a story, which told how a boy, for the purpose of curing superstition in a younger brother, made an electrical machine, and astonished him with a display of its wonders ; and how he invoked the aid of phosphorus to increase the child's astonishment. Upon this, the embryo electrician set to work, and made successfully with apothecaries' bottles an electrical machine and a Leyden phial. Beside these, with a leaden syringe and a dinner-tumbler, he manufactured for himself an air-pump.

Young chemists have ever been great plagues to their friends, their rudimentary experiments usually resulting in spoiled clothes and damaged furniture. William Grove was no exception to the rule, and from this cause his father was led to discourage, although he did not actually forbid his scientific pursuits. This and other causes, especially the active business of preparation for College, and then a College life, tended to check the spirit of

experimental inquiry, and for a period indeed to repress it. For sixteen years the spark which was eventually to burst out in brighter flashes lay smouldering in the brain of the future philosopher.

Mr. Grove was intended by his father for the Church, and he became a student of Brasenose, Oxford, in 1830; and he completed his University term with honour in 1833. Conscientious scruples interfered with the father's desires, and the son was two years after this, that is in 1835, called to the Bar.

About this time he married; and shortly after he was obliged to quit England for a season, to seek in Continental travel a restoration of lost health. The forced leisure thus obtained was devoted to reading up electricity, which led to a re-awakening of scientific aspirations. This was very quickly followed by original experiments and important discoveries in this important branch of science. We find Mr. Grove, in 1839, communicating to the Académie des Sciences de Paris, through M. Becquerel, the fact that if a positive electrode be immersed, half in water, the other half being in a tube of hydrogen, and a negative electrode in water and oxygen, the water ascends in the tubes, the galvanometer is deflected, and the water is decomposed and recomposed by voltaic action. This was the first idea of the *gas battery*. In the same year, M. Becquerel communicated to the French Academy Grove's nitric acid battery. Up to the introduction of this, Daniell's pile was the most powerful; but by the employment of platinum and nitric acid, the force developed was considerably increased; indeed, according to Jacobi, this battery was sixteen times more powerful than any existing voltaic arrangement. These discoveries were likewise published in the 'Philosophical Magazine' of the same year; as was also an important paper "On the Inaction of Amalgamated Zinc in Acidulated Water," in which this phenomenon is satisfactorily explained for the first time. In 1840, Mr. Grove was elected a Fellow of the Royal Society; and about the same time he became connected with the London Institution as the Professor of Experimental Philosophy, which office he held for five years.

In 1841 was published an important paper "On Combinations by the Voltaic Battery of Azote and Hydrogen with Metals;" and in the same year, a considerable amount of interest was excited by the exhibition before the Electrical Society of Daguerreo-

type pictures engraved by electricity. The extreme delicacy with which this was effected by Mr. Grove, led to the hope that the reproduction of those beautiful pictures in a permanent form would become an easy process. This engraving was effected by placing a Daguerreotype as the positive pole of a voltaic couple in hydrochloric acid. After the etching had been effected, an electrotype copy was taken, from which impressions in printers' ink could be at once obtained, as from an ordinary engraving. It is difficult to explain why this process has never been adopted; possibly it was because the lines were too delicate to admit of printing many impressions from the electro-plate. The process was published in full in the Proceedings of the London Electrical Society. For some years, notwithstanding the steady increase of his practice at the Bar, Mr. Grove found the necessary time for electrical investigations. He produced and described his voltaic gas battery; wrote a paper "On its Applications to Eudiometry;" and published in the 'Philosophical Transactions' a "Memoir on the Action of Phosphorus, Sulphur, and the Hydrocarbons in the Gas Pile." "Electric Action by the Approximation of Dissimilar Metals without Contact," was the title of a communication to the 'Literary Gazette.' In this Mr. Grove explained, that when a disk of zinc and copper are approximated without touching, and then separated, the gold leaves of an electroscope diverge, thus proving the existence of a radiating force capable of exciting electrical disturbance. Several very important papers were published by Mr. Grove in the 'Electrical Magazine' in the years 1843-45; and he lectured at the Royal Institution "On the Phenomena of the Voltaic Arc," and "The Transport of Particles of Matter effected by Electrical Discharges." In 1847, "The Decomposition of Water by Heat" was communicated to the Royal Society. In this remarkable paper it was shown that any of the inoxidizable metals, as platinum, iridium, and the like, heated to a very high temperature by the oxyhydrogen blowpipe, had the power of decomposing water into oxygen and hydrogen when plunged into that fluid, or its vapour.

The "Production of Heat by Magnetism" was another important step in corroboration of the views which Mr. Grove had already propounded in the Theatre of the London Institution, in 1842-43. In January, 1842, Mr. Grove delivered a lecture "On the Progress of Physical Science," which was printed at the

request of the Proprietors of the London Institution. In this the "Correlation of Physical Forces" was briefly but clearly enunciated. In 1843 a course of lectures—delivered in the same theatre—explained and illustrated the propositions succinctly given in the former year. The substance of those lectures was published as an Essay in 1846, and in a more perfect form in 1850. The position sought to be established was—that the various affections of matter which constitute the main objects of physical science, viz. heat, light, electricity, magnetism, chemical affinity, and *motion*, are all correlative, or have a reciprocal dependence. "That neither, taken abstractedly, can be said to be the essential or the proximate cause of the others, but that either may, as a force, produce the others: thus heat may mediately or immediately produce electricity, electricity may produce heat, and so of the others, each merging itself as the force it produces becomes developed." Attention has of late been most earnestly directed to this philosophy, and there have been many experimentalists at work, and deep thinkers making their deductions from the observed experimental results, all of them establishing the correctness of the views put forth in 1842 by Mr. Grove. When this gentleman delivered this lecture, he introduced an experiment which deserves a careful record. In a whirling-table or train of wheels, the smallest, or that which revolved most rapidly, was of metal, and had a piece of phosphorus in it. While this revolved with great rapidity the phosphorus remained cool, but by a lever the wheel was suddenly stopped, and the phosphorus took fire. The object was to show that *motion arrested* becomes heat; and, certainly, this appears to have been the first published experiment in proof of the received view, that heat is a mode of motion, or to use Mr. Grove's own words on a subsequent occasion, "The general scope of the argument from the negation of perpetual motion leads the mind to regard the so-called imponderables as *modes of motion*, and not as different kinds or species of matter."

Reference has already been made to the Nitric Acid Battery, but the power which it has placed in the hands of the experimentalist has not been sufficiently noticed. All the splendid discoveries which have been made in connection with the magnetic conditions of matter, may be regarded as due to the tremendous power, which can be at once developed, and as rapidly suspended, by the use of Grove's battery. In the theatre of the Royal In-

stitution, in 1849, with 500 elements of the Grove battery well insulated, platinum was melted on the surface of distilled water, and a globule of liquid platinum was, as it were, suspended above the surface of the water by the force of the current, while brilliant scintillations of this metal were thrown off in a direction perpendicular to the surface of the water.

In 1852, the "Electro-Chemical Polarity of the Gases" engaged Mr. Grove's attention, and formed the subject of a memoir published in the 'Philosophical Transactions.' In this memoir the phenomenon of the stratifications in the electric light is for the first time published.

The 'Electricity of Flame,' and the formation of a flame-pile capable of producing chemical decomposition, was the result of Mr. Grove's continued researches, and in 1855 he showed—as far as we know, for the first time—the conversion of electricity into mechanical power. It was shown that when a weight is raised by electric attraction and repulsion, there is a diminution in the electric tension, and that the spark cannot traverse the same distance that it could traverse, with the same apparatus and charge, without the elevation of the weight.

'The Production and Fixing of Electrical Images between Two Plates of Glass,' 'The Influence of Light on Polarized Electrodes,' and several other papers and discoveries of interest in Physical Science, should have been noticed, had the limits of this publication permitted it. 'Some Effects of Heat on Fluids' alone can now be noticed. These investigations prove the very striking fact, that to whatever extent water be boiled, there will always remain for each ebullition a nucleus of permanent gas (nitrogen); so with other liquids, the residual gas varying with the liquid. Astronomical observations have formed the occasional employment of this active mind, as the Journal of the Astronomical Society will show.

It must not be forgotten, that those numerous subjects of inquiry have been pursued by one who has been ever busy in his profession of the Law, which, only in a few cases, leads towards the ground upon which science bestows her labours. Steadily making progress at the Bar, at the same time as he was working hard at, and making discoveries in science, Mr. Grove established his position, and was made Queen's Counsel in 1853, and for some years he has been the leader of the South Wales and

Chester circuit. As an experimentalist, or as an inductive philosopher, Mr. Grove has ever displayed a large amount of the power required for questioning Nature. His experiments have been devised with ingenuity and carried out with skill, in which his mechanical aptitude, so early developed, has served him well. His deductive powers are of a superior order, in proof of which we have a fine example, in the original thought and the generalizing power of that work, which will carry down his name in honour amongst the Philosophers of Europe, 'The Correlation of Physical Forces.'



WARREN DE LA RUE, F.R.S.,

PRESIDENT OF THE ROYAL ASTRONOMICAL SOCIETY.

WARREN DE LA RUE was born in the island of Guernsey, on the 18th of January, 1815. He was educated, in the first instance, at a private school in Walthamstow, and finally at the Collège de St. Barbe, in Paris. He displayed considerable ability in his earliest years, and carried off several prizes for his acquirements.

In 1840 the subject of our notice became a partner in his father's well-known business, which is still carried on under the name of Thomas De La Rue and Co., and mechanics was studied by him almost as a necessity for the requirements of the manufactory; yet he sedulously followed up a taste which he had early imbibed for the study of chemistry as a science. When the College of Chemistry was established, and Dr. Hofmann appointed as Professor, Mr. Warren De La Rue entered as a student, principally devoting his attention to Liebig's methods of organic analysis. Previously to this, he had communicated original researches to the scientific journals, and subsequently, after having spent two years in investigating the constituents of Cochineal, he published a paper "On the Colouring-matter and other Constituents of Cochineal," in the Chemical Society's Journal, which memoir is regarded as the standard work upon that subject.

Of late years, Mr. De La Rue has principally devoted his attention to astronomical pursuits; still he has found leisure for chemical researches. These have been undertaken jointly with Dr. Hugo Müller, and they are published in the Transactions of the Royal and of the Chemical Societies. In 1850 Mr. Warren De La Rue was elected a Fellow of the Royal Society. In 1851 he was one of the Jurors of Class XXIX., "Miscellaneous Manufactures;" and conjointly with Dr. Hofmann he furnished to

the volume of the Jurors' Report a very elaborate paper, containing much important matter descriptive of many of the curious and useful manufactures which were comprehended under this head. It will be remembered by many that one of the great attractions in the nave of the Hyde Park Crystal Palace was De La Rue's envelope-folding machine. This was the joint invention of the subject of this memoir and Mr. Edwin Hill, brother of the renowned Postal reformer. In connection with this may be named Mr. Warren De La Rue's method of multiplying in steel and electrotype the surface-printing blocks for the production of commercial and postage stamps, which has been adopted by our own and several of the foreign Governments. This, in connection with the envelope-folding machine and other examples of the interesting manufactures produced at Mr. De La Rue's works, obtained for the firm, from the Paris Exhibition in 1855, one of the few grand gold medals awarded on that occasion, while the then head and founder of the establishment, Mr. Thomas De La Rue, was honoured by the distinction of Knight of the Legion of Honour. Mr. Warren De La Rue was a member of the Jury of Class X. in this the Paris Exhibition; and at the request of M. Dumas, the celebrated chemist, who was the Chairman of that Jury, the Emperor bestowed on him the same distinction as that with which his father had been honoured.

Among the natural products exhibited at Paris on this occasion was a new kind of resin, obtained from a species of *Ficus*, which was brought under the attention of Mr. De La Rue by Mr. (now Sir William) Arthur, the Commissioner for New South Wales. In conjunction with Dr. Hugo Müller, this resin was carefully examined, and it was discovered to contain a natural acetic ether of a new radical, homologous to Benzyl ($C_{14}H_7$). A memoir "On the Resin of *Ficus rubiginosa* and a New Homologue of Benzylic Alcohol" appears in the Philosophical Transactions for 1860.

While prosecuting his chemical investigations, Mr. W. De La Rue was induced to apply the microscope in his researches, and this led him to employ that instrument in other investigations. He was a contributor of papers to the Journal of the Microscopic Society. He also aided materially in stimulating instrument-makers to increase the aperture and perfection of their object-glasses, a great number of which were tested by him, he having obtained from Mr. Nobert, of Pomerania, test-plates with lines

closer and closer with which to test them, until at last the lines were so fine as not to be more distant from centre to centre than $\frac{1}{1000000}$ of an inch. Mr. Warren De La Rue is now President of the Astronomical Society; and it is interesting to record the incident which led him to the construction of Telescopes, and to become a close astronomical observer. Above eighteen years since he was paying a visit to Mr. Nasmyth, who on his arrival was engaged in trying the focal length of a speculum which he had recently ground and polished, and which Mr. Nasmyth was directing on the sun. Perceiving two spots on the bright image which was projected on a slip of beard, Mr. De la Rue, thinking they were defects in the mirror, remarked, "You will have some work to rub out those pits." "They are not pits," rejoined Mr. Nasmyth, "but spots on the sun." Mr. De La Rue's curiosity was aroused; he desired to possess a telescope; and by the aid of the experience of Mr. Nasmyth, he shortly constructed an instrument of a very perfect description. His microscopic studies had educated the eye, and thus aided the young astronomer in the manufacture of mirrors. Throughout his first studies Mr. Nasmyth was his ever ready friend and adviser; and the writer of this notice has heard Mr. De La Rue speak of a large volume of letters written to him by Mr. Nasmyth, containing most trustworthy advice on telescope figuring. Ultimately Mr. De La Rue pushed the figuring of mirrors to the highest degree of perfection by some machinery of his own contrivance, which is described in the monthly notices of the Royal Astronomical Society, vol. xiii., and also by Sir John Herschel in his article "Telescope" in the 'Encyclopædia Britannica,' who especially says that Mr. De La Rue's mechanism "has afforded very admirable results in the production of specula thirteen inches in aperture and ten feet focal length, the perfection of which is enhanced by his practice of bestowing the same care and precision on every step of the figuring."

The fruit of the perfection in the figure of Mr. De La Rue's mirrors has been the circulation of a series of exquisite engravings from his own drawings of the planets Mars, Jupiter, Saturn, Donati's Comet of 1858, and the Comet of 1861. Conjointly with these observations, Mr. De La Rue has paid great attention to astronomical photography, his attention having been drawn thereto by a lunar photograph by the elder Professor Bond, of

Cambridge, Massachusetts, U.S. The progress made in astronomical photography by Mr. De La Rue cannot be better described than in the words of Dr. Lee, on the occasion of the presentation of the Medal of the Royal Astronomical Society in 1862. "Mr. De La Rue at first had no clockwork apparatus to govern the motion of his telescope, and after making several successful lunar photographs with the aid of the hand-gear of the telescope, he discontinued his selenographical experiments until he had removed from Canonbury to Cranford (this was in 1857). . . . He then furnished his telescope—his own in a double sense—with a clockwork apparatus, which from time to time has passed through numerous alterations, and which is still in course of improvement. The mechanical problem before him, as the Fellows of this Society well know, was one of extreme complexity; for not only must the motion of the clockwork be perfectly smooth and equable, but it must also be capable of acceleration and retardation, to keep pace, so to speak, with the ever-varying velocity of the moon in the heavens,—a variation compounded of its diurnal motion and its ever-changing velocity in its orbit. Lastly, by a rare and happy combination of chemical with mechanical skill, the time necessary for the exposure of the collodion film was materially shortened. The final result is this,—that images of the moon have been repeatedly taken in the focus of the mirror admitting of very considerable amplification, and exhibiting details on the moon's surface sufficiently clear to admit of delineation under a microscope provided with a camera lucida, and thereby furnishing materials for a more accurate selenography than has heretofore existed. Neither must we altogether omit that by stereoscopically combining images of the moon taken in different phases of her vibrations, more particularly enlarged copies eight inches in diameter, Mr. De La Rue has brought to light details of dykes and terraces and furrows and undulations on the lunar surface, of which no certain knowledge had previously existed."

Of these photographs having the true stereoscopic relation, the Astronomer Royal says they are an experimental proof of the roundity of our satellite, and Sir John Herschel speaks of them as such a view as would be obtained by a giant with eyes thousands of miles apart. The perfection of those photographs of the moon is proved by the fact that one of the series has recently been enlarged to thirty-eight inches in diameter, and gives us such a picture of the moon's surface as was never before seen.

The moon and the planets have not solely engrossed Mr. De La Rue's attention, for, it having been pointed out to the Royal Society that it would be desirable to obtain a daily photographic record of the appearance of the sun's disk, the Council of that body requested Mr. De La Rue to devise an instrument to effect that object; this task he undertook and accomplished, many difficulties presented themselves, however, in the way, and it required a great amount of perseverance and skill to overcome them. The instrument was, in the first instance, erected at the Kew Observatory of the British Association, and was then worked during the direction of the late Mr. Welsh, and Mr. De La Rue has expressed his indebtedness to that gentleman and to Mr. Beckley for several valuable suggestions. In 1860 Mr. De La Rue took the instrument to Rivabellosa, near Miranda de Ebro, in Spain, for the purposes of observing the total eclipse in July of that year. The expedition formed part of that organized by the Astronomer Royal, Professor Airy, and now known as the Himalaya Expedition, from the name of the steam-ship which was placed at the Astronomer Royal's disposal. Mr. De La Rue was quite successful, having obtained many photographs of the partial observation and two of the totality.

On July the 19th, the day after the eclipse, the 'Times' contained the following telegram, sent by Mr. De La Rue:—

"The success is complete. We have two photographs of the red flames, which prove that they belong to the sun; and many photographs of other phases."

How fully this announcement is borne out,—of the red flames being solar phenomena, and not produced by any peculiar action of the moon's edge or any other optical phenomena,—can be seen by Mr. De La Rue's elaborate paper, entitled "The Total Solar Eclipse of July 18th, 1860, observed at Rivabellosa, near Miranda de Ebro, in Spain." The reading of this paper as the Bakerian Lecture, on April 10, 1862, was illustrated most brilliantly by apparatus, reproducing some of the phenomena of a total eclipse. In the same year, Mr. De La Rue paid a visit to Padre Secchi, at Rome, and compared his photographs with those obtained by Padre Secchi. He has stated, in a paper recently published in the Proceedings of the Royal Society, that the prominences were the same in both series, thus showing that as Father Secchi's were obtained seven minutes later than Mr. De La Rue's, no

change in their form took place during the duration of a total eclipse (four minutes in any given locality), as had been maintained by some observers.

The Russian Academy of Sciences of St. Petersburg, and M. Otto Struve, have considered Mr. De La Rue's methods of photo-heliography of so much value, that they requested him to undertake the superintendence of the manufacture of a photo-heliograph and one of his micrometers for Wilna, and to instruct one of the astronomers in his methods of observation. The instrument is now about being put in operation at Wilna by Dr. Sabler, who resided some weeks at Cranford, and received instruction in photo-heliography.

Mr. De La Rue's methods have been fully published in the reports of the British Association, in his "Report on Celestial Photography in England," and in the Bakerian Lecture, already referred to.

For seven years Mr. De La Rue was one of the Honorary Secretaries of the Royal Astronomical Society, of which he is now the President, having, in February, 1862, had conferred upon him the high distinction of the Society's Gold Medal for his successful discoveries in Astronomical Photography.

The French Photographic Society having this year determined on the award of medals, has selected Mr. De La Rue as one of four French and foreign contributors to its success, as a recipient of one of the medals.

One of the Royal Medals of the Royal Society was awarded this year to Mr. De La Rue for his Bakerian lecture and discoveries.



JOHN HULLAH.

WHILE we pay all honour to men of genius who enrich us by their creations, inventions, and discoveries, we should not be unmindful of those who by perseverance and untiring personal effort prepare the popular mind for the reception and due appreciation of the works of art or science. If such labours deserve a place in a country's annals, few men can show a better title than the subject of the present memoir, to whom we are indebted for the first and most successful attempt to diffuse widely among his countrymen a sound knowledge of musical art and to cultivate a taste for her highest compositions.

John Hullah was born June 27th, 1812, at Worcester, but his parents shortly after removed to London, which has since been the place of his residence and the scene of his labours. After trial of many schools, his education was chiefly and finally received at that of Mr. Hine, of Brixton, an intimate friend of Wordsworth, and a passionate admirer of his school of poetry. From Mr. Hine, John Hullah imbibed a love of literature, especially of English, which has exercised no inconsiderable influence upon his subsequent career. At the time of his leaving school he had no knowledge of music, though he inherited a taste for it from his grandfather, Mr. Charles Biggar, who was well known as a musical amateur in the latter part of the last century. His mother also possessed a remarkable voice, and had been for some time a pupil of John Danby, the glee composer. John Hullah's resolution to devote himself to music, and to commence the study of it at the unusually advanced age of seventeen, was opposed by every one who knew him, and more especially by all persons of musical experience. Nothing daunted, however, he became the pupil of Mr. Horsley, and remained under his instruction for three years.

At the expiration of this term he entered the Royal Academy of Music, chiefly with a view of studying singing and of possessing himself of some of the traditions of the old Italian school, one of the last representatives of which, Crevelli, was then in great force. About this time, and after having made several attempts at operatic music which were never completed, Mr. Hullah, in connection with Mr. Charles Dickens, who wrote the libretto, set to music an opera called 'The Village Coquettes.' This having been made known to the late Mr. Braham, the eminent singer, who had just opened the St. James's Theatre, was accepted and produced by him in 1836. Such was the success and popularity of the piece, that it was performed about sixty nights during the first season. Mr. Hullah subsequently produced at Covent Garden, under the management of Mr. Macready, two other operas, 'The Barbers of Bassora,' written by Maddison Morton, and 'The Outpost,' written by Serle. Both of these were favourably received, but did not meet with the amount of success which attended 'The Village Coquettes.' Another opera, 'The Gondolier,' written by Mr. Chorley, was afterwards completed, and might have been performed, had not Mr. Hullah's attention been diverted from composition to what has turned out to be *the* work of his life—popular musical instruction.

He had already formed some plans in reference to this subject, and had made some progress in an instruction book, when he heard that a German named Mainzer had taught some large classes of *ouvriers* in Paris. He accordingly visited that capital for the first time in the autumn of 1838, but found, to his great disappointment, that Mainzer had left, and that his classes were no more. On paying a second visit to Paris in the winter of 1839, his observations resulted in his adoption of the method of Wilhem as the basis of his own. His first experiments were made at the then new Normal School at Battersea, founded by Dr. Kay, now Sir J. P. Kay-Shuttleworth, Bart., and Mr. Edward Tufnell. The progress of his pupils—boys of very humble origin and little culture—soon attracted attention, and he was invited to form classes in other places. With the aid of a few subscriptions from some friends of education, he opened "under the sanction of the Committee of Council," his first public class for schoolmasters, at Exeter Hall, in 1840. This was immediately followed by others, both there and elsewhere. In 1841 a great choral meet-

ing of his pupils was held in Exeter Hall, in which upwards of fifteen hundred persons of all ages and of both sexes took part. This was the first of those great gatherings, now so common, ever held in this country. Henceforth the movement grew in popularity, and classes rapidly multiplied both in London and in the provinces, under teachers who had been members of Mr. Hullah's classes; besides which the method was introduced into many schools, both public and private. The cost and inconvenience of Exeter Hall directed Mr. Hullah's thoughts to the possibility of erecting a building expressly for his classes; and by more than one very unusual effort of private munificence he was enabled to accomplish this. The foundation-stone of St. Martin's Hall was laid by the Earl of Carlisle, in June, 1847, and in December, 1853, the whole building was opened in a complete state.

From this time, in addition to numerous large elementary classes, conducted as before, ten or twelve concerts of music of a high class were given in each year by Mr. Hullah with orchestra and chorus, the latter consisting of the members of his more advanced classes, and admitted to be one of the best trained in the metropolis. Much of the music presented at these concerts was either actually new, or had never been previously performed in England. Among other works thus introduced and which have obtained a permanent footing on British soil may be mentioned Mendelssohn's 'Lauda Sion,' the MS. score of which was presented to Mr. Hullah by the composer, and Gounod's 'St. Cécile Mass.' Many of the most eminent singers and orchestral performers now before the public made their first appearances and gained their first experience in Mr. Hullah's orchestra. Among the former may especially be mentioned Madame L. Sherrington and Mr. Santley, and his pupils Miss Banks and Miss Palmer.

After a duration of twenty years, this successful career was suddenly terminated by the destruction of St. Martin's Hall by fire, on the night of Sunday, August 26, 1860.

Of the number of persons indirectly taught under the system there are no means of forming an estimate; those directly taught by Mr. Hullah himself cannot be fewer than thirty thousand. At the time of the destruction of the hall, the classes meeting there alone numbered two thousand members. Since that event Mr. Hullah has given up public classes entirely, from the impossibility of carrying on such a work efficiently except on a large scale,

and has devoted himself chiefly to the history and literature of music.

In the spring of 1861 he gave a course of lectures "On the History of Modern Music," at the Royal Institution of London, which have since been published. A second course, "On the Transition Period of Musical History," delivered in 1864, is in the press.

Mr. Hullah is the author of some important works on the Theory of Music, such as Grammars of Harmony and of Counterpoint, besides having published numerous Collections and Selections of Part Music, School Songs, and Incidental Lectures and Papers on Musical Subjects.



REAR-ADMIRAL SIR GEORGE BACK, D.C.L., F.R.S.

THIS distinguished Arctic navigator was born on the 6th of November, 1796, at Stockport, in Cheshire. He entered the Royal Navy as midshipman on board the 'Arethusa' in 1808, being then in his thirteenth year. In the following year he took part in the capture of several French ships upon the coasts of Spain. He had much severe boat-service; and on one occasion he was in the launch, which was captured, but not until fifteen men out of eighteen were killed or mortally wounded. Back was sent a prisoner to Verdun in France, where he was detained five years. On the return of the Bourbons in 1814, he regained his liberty, and immediately joined the 'Akhbar,' which was sent to the North American station, where she did not long remain, but coming home, received the flag of Sir Byam Martin, and was sent to the Scheldt. In 1816 Back passed his examination, and was appointed Admiralty midshipman to the 'Bulwark;' and in 1818 he was removed to the 'Trent,' under the command of Lieutenant Franklin, for which ship he had volunteered. Franklin appears to have encouraged his young midshipman's desire of devoting himself to voyages of discovery. We next find him on board the 'Dorothea,' under the command of Captain David Buchan, who had been directed to advance in a direct line towards the North Pole, and to cross the seas of Spitzbergen, as far as the route should prove practical. The ice opposed their advancing further than latitude $80^{\circ} 36' N$. In 1819 Back again joined his friend Lieutenant Franklin as Admiralty midshipman, to make observations, drawings of the land, of the natives, and objects of natural history in an Arctic voyage.

On the 22nd of May, 1819, Commander Franklin and his party

embarked on board the Hudson Bay Company's ship, their directions being to "explore the northern coast of America, from the mouth of the Copper-mine river to the eastward; to lay down the line, or trending, of that coast, as far as the eastward extremity of that continent." The vessel was detained by contrary winds and foul weather in Yarmouth Roads, where the officers and passengers ventured on shore. The wind suddenly changing, the Commander caused guns to be fired, as an intimation of putting to sea; the passengers forthwith embarked, but Mr. Back was missing; no time however was to be lost, and shortly after, the ship sailed without him, and arrived at Stromness on the 3rd of June. There business with the Hudson's Bay agent, and the difficulty of obtaining four boatmen to assist in the navigation of the lakes and rivers of North America, detained them till the evening of the 9th. Then, says Franklin, "we had the gratification of welcoming our absent companion Mr. Back. His return to our society was hailed with sincere pleasure by every one, and removed a weight of anxiety from my mind. It appears he had come down to the beach at Caistor just as the ships were passing by, and had applied to some boatmen to convey him on board; but discovering the emergency of his case, they demanded an exorbitant reward, which he was not, at the instant, prepared to satisfy, and in consequence they positively refused to assist him. Though he had travelled nine successive days almost without rest, he could not be prevailed upon to withdraw from the agreeable scene of a ball-room, in which he had joined us, until a late hour." This exploring party arrived at York Factory in Hudson's Bay on the 30th of August. On the 9th of September their arrangements being completed, they left, and arrived at Fort Cumberland on the 22nd of October, having travelled over a distance of "nearly seven hundred miles with and against the streams of some ten different rivers and nine lakes, to say nothing of rocks, rapids, and portages." The services of Mr. Back and his companion Mr. Hood, in constructing charts and taking views were of incalculable benefit, and were highly spoken of by the commander of the expedition. On the 18th of January, Franklin, with Mr. Back as his companion, left Cumberland House for Fort Chipewyan, which they reached on the 26th of March,—a journey of 857 miles having been performed, the cold being so intense that they "found the mercury of our thermometer had sunk into

the tube and was frozen." The adventurous journey which followed presents too many incidents to be described in this place. On the 18th of July the party embarked in their canoes; on the 24th they reached Moosedeer Island, and on the 28th they arrived at Fort Providence, situated on the north-eastern side of Great Slave Lake. On the 2nd of August they left Fort Providence; on the 20th they reached the spot where it was decided to winter, a distance of 550 miles from Chipewyan, to which the name of Fort Enterprise was given. Now Messrs. Back and Hood were dispatched for the purpose of ascertaining the distance and size of the Copper-mine river. "I was much pleased," says Franklin, "with the able manner in which these officers executed the service they had been dispatched upon. . . . They scarcely had ever more than sufficient fuel to boil the kettle; and were generally obliged to lie down in their wet clothes, and consequently suffered much from cold." From Fort Enterprise Mr. Back volunteered to return to Chipewyan, to obtain and hasten the supplies, without which the expedition must have perished. He left his companions on the 18th of October, and returned to them on the 17th of March. "Back," says Mr. Barrow, "in this dreadful journey was not only exposed to starvation and the extremity of cold, but also in danger of perishing in some of the lakes which they had to cross on foot. On a narrow branch of the Slave Lake he fell through the ice, but escaped without injury; on another occasion the ice bent so, that it required the utmost speed to avoid falling through where it gave way, as it seems to have done at every step he took. In short, it was little less than miraculous, considering the season and the severity of the weather, that he ever returned safe." Mr. Back says of himself on his return,—“I had the pleasure of meeting all my friends in good health, after an absence of five months, during which time I had travelled 1104 miles on snow-shoes, and had no other covering at night in the woods than a blanket and deer skin, with the thermometer frequently 40°, and once at 50° below the freezing-point, and sometimes passing two or three days without tasting food.”

At Fort Enterprise the party remained until the 14th of June, 1821, when they prepared for their long journey down the Copper-mine river. On the 30th of June they reached and embarked on its stream, at a point called Rock Nest, and on the 21st of July

they left the mouth of this river, in two birch-bark canoes, for a navigation along the southern coast of the Polar Sea to the eastward. On the 26th of August, says Franklin, "we terminated our voyage on the Arctic Sea, during which we had gone over six hundred and fifty geographical miles." The melancholy tale of their journey back will be in the memory of all. The murder of Mr. Hood by Michael the Iroquois, who, there is no doubt, murdered also Belanger and Perrault, and fed upon their flesh, and the noble daring with which Dr. Richardson sacrificed this savage, are terrible incidents which have been often told. Back, as usual, displayed the most heroic perseverance, and Franklin attributes mainly to his personal exertions the final safety of the expedition. In 1821 Mr. Back was made a lieutenant. In 1825 Lieutenant Back accompanied Captain Franklin on another expedition to the Arctic Sea, for the purpose of co-operating with Captains Beechy and Parry in their attempts to discover from opposite quarters a North-west passage. The particulars of this remarkable mission will be found fully described in Franklin's 'Narrative of a Second Expedition to the Shores of the Polar Sea in 1825-27.' On this occasion Lieutenant Back extended his researches to latitude $70^{\circ} 24'$ N., longitude $149^{\circ} 37'$ W. When Franklin returned, Back, who was, in 1825, promoted to the rank of commander, was left at Fort Franklin in charge of the officers and men who had not accompanied their chief, and of all the boats, natural history collections, etc., with instructions to proceed to York Factory on the breaking up of the ice. He faithfully performed this duty, and returned to England in 1827.

Commander Back remained unemployed until 1833. Being in Italy, a report had reached him that Captain Ross and his nephew had perished—they had not been heard of since 1829—and he returned immediately to England, and volunteered his services to proceed at once in search of the lost expedition. This offer was accepted, and on the 17th of February, 1833, Commander Back and his party left England. The history of this expedition is given by himself, in his 'Narrative of the Arctic Land Expedition to the Mouth of the Great Fish or Back River, and along the Shores of the Arctic Ocean, in 1833-35.' Exactly one year after Commander Back had left Canada, he was informed of the return of the Ross's to this country, and consequently his duty became one of exploration merely. Commander Back completed his

voyage, and returned to England on the 8th of September, 1835, after an absence of two years and nearly seven months, and was rewarded for his enterprise and skill by promotion to the rank of Post-Captain. In the ensuing year (1836) the 'Terror,' bomb-ship, was fitted out with every appliance necessary, as it was supposed, to ensure success in Arctic exploration. The Admiralty, in their instructions to Captain Back, who was appointed to the 'Terror,' observe that at Salisbury Island "you will have to choose between the direct and obvious course up Frozen Strait, which was performed with apparent ease by the 'Fury' and 'Hecla,' in 1821, or the more circuitous route by the 'Welcome,' which was unsuccessfully attempted by the 'Griper,' in 1824." Beyond this they add—"That this Arctic expedition may be distinguished from all others by the promptitude of its execution and by escaping from the gloomy and unprofitable waste of eight months' detention; it is therefore our distinct orders that every effort shall be made to return to England in the fall of this year." So far from being enabled to accomplish this, Captain Back and his companions were wedged up for ten months by massive ice in the wide ocean. The whole voyage, we quote the words of Sir John Barrow, "was of a nature so extraordinary and unparalleled in the history of voyages, ancient and modern, as not to be forgotten, even by the readers of it, still less by the spectators. To pass a winter among ice in a ship firmly fixed in harbour, or close to the shore, quietly and without hard labour on the part of the men, and with all their comforts about them, has not been found disagreeable; but to winter in a ship which for ten long months was tossed about amidst interminable ice in the wide ocean, always in motion, and unceasingly threatened to be crushed to atoms, when every soul on board must inevitably have perished; such a case cannot be contemplated without the strongest feelings of compassion for the helpless sufferers." In 1837 the Geographical Society conferred upon Captain Back both its medals. He also received the gold medal of the Geographical Society of Paris, together with a service of plate presented by the subscribers to the Arctic Land Expedition. From the period of his return from his last disastrous voyage, if we except a temporary appointment under the Treasury to examine and report on the condition of Holyhead Harbour, Captain Back has remained on half-pay. In 1839 he received the honour of knighthood; in 1847 he was

elected a Fellow of the Royal Society, and he attained his rank as Rear-Admiral in 1857.

A more adventurous life has not often been recorded, and few men who have been placed in situations of extreme difficulty, have shown such an amount of determination, always tempered by discretion, as that which has ever been displayed by Sir George Back.



CHARLES CARDALE BABINGTON, F.R.S.,

PROFESSOR OF BOTANY TO THE UNIVERSITY OF CAMBRIDGE.

CHARLES CARDALE BABINGTON, the Cambridge Professor of Botany, was born at Ludlow, in Shropshire, November 23, 1808. His father, the Rev. Joseph Babington, M.A., of that place, was descended from an ancient family long settled in Derbyshire and Leicestershire. Mr. Babington was educated partly at the Charterhouse, London, but chiefly under a private tutor at Bath. In 1826 he commenced residence at St. John's College, Cambridge, where he proceeded B.A. in 1830, and commenced M.A. in 1833.

Having imbibed a taste for botanical pursuits, Mr. Babington became a zealous collector, while resident in Bath, of the plants of that district, and, in 1833, published his first work, 'Flora Bathonensis.' To this work he added, in 1839, a considerable 'Supplement.' In the summers of 1837 and 1838, he proceeded to the Channel Islands, for the sake of exploring the botany of Jersey, Guernsey, Alderney, and Sark; and the result of his researches was published in the following year, in a work entitled 'Primitiæ Floræ Sarnicæ, or an Outline of the Flora of the Channel Islands.' The work, however, on which Mr. Babington's fame as a botanist chiefly rests, is his 'Manual of British Botany.' This volume, comprehending the whole of the flowering plants of the British Isles, appeared in 1843, and is now in its fifth edition. It is much esteemed by students, but is considered by systematic botanists to be far too numerous in species. Mr. Babington is also the author of numerous botanical papers in the 'Transactions of the Linnean Society,' in the 'Transactions of the Edinburgh Botanical Society,' in the 'Annals of the Magazine of Natural History,' and other journals. Mr. Babington has also written, to some considerable extent, upon archæological subjects, several

papers by him having appeared in the 'Cambridge Antiquarian Communications,' the 'Archæologia Cambrensis,' and elsewhere. In 1853 he published a separate essay on the antiquities of the county in which he had so long resided, entitled 'Ancient Cambridgeshire.'

Mr. Babington was elected a Fellow of the Royal Society in 1851; and in 1861 he was appointed by the University of Cambridge to the Chair of Botany, then recently become vacant by the lamented decease of Professor Henslow.



ADMIRAL FITZROY, F.R.S.

ROBERT FITZROY, now a Vice-Admiral on the Reserved List, was born at Ampton, in Suffolk, in 1805, being the youngest son of Lord and Lady Charles (Frances A. Stewart) FitzRoy.

He was at Harrow and the Royal Naval College before going to sea, at fourteen years of age. Under able officers, and on healthy stations, he enjoyed many advantages. He was promoted early, as a direct consequence of good examinations and the first medal at the College, besides other favourable notices.

In November, 1828, he was appointed to command the 'Beagle' surveying vessel, from which time till 1836 he was engaged in a long series of hydrographical exploration and descriptions.

In December, 1834, while in the Pacific, engrossed by these distant duties, he was made Captain, but still continued to command the 'Beagle' and carry on surveys, besides a connected and complete chain of longitude by meridian distances, round the globe,—from Greenwich westward, to the same point again.

This continuous chain of meridian distances had no break,—no link was defective; therefore its value in settling meridians was great. From ten to twenty chronometers were always employed.

In these voyages, Mr. Darwin was gathering much of those treasures of information which have been so widely utilized since, not only by himself, but the literary and scientific world. His numerous works are well known, and have been lately mentioned with great honour, by the President of the Royal Society, on the occasion of his presentation of the Copley Medal to their author.

In the 'Voyages of the Beagle,' published in 1839, there are too many subjects of interest to attempt a summary here, but out

of that work and its results, many useful fruits have grown. In the course of these voyages more than £3000 were expended out of private means in expediting the public service by employing small vessels as tenders.

In 1837 the Royal Geographical Society honoured Captain Fitzroy with their Gold Medal, in acknowledgment of the results of the 'Beagle's' voyages.

In 1838 he was elected an Elder Brother of the Trinity House; in 1841, became Member for Durham, and next year was selected to act as the Conservator of the Mersey.

In August, 1842, he was named by the Admiralty to attend on the Archduke Frederick of Austria, in his tour through Great Britain. In March, 1843, he introduced a Bill into Parliament for establishing Mercantile Marine Boards, and requiring the examination of Masters and Mates in the Merchant Service.

Much of the Act—called the "Mercantile Marine Act"—was taken from that Bill.

In April, 1843, Lord Derby, then Lord Stanley, proposed to Captain Fitzroy to go out to New Zealand as Governor: and he thought it his duty to undertake that onerous office, however distant and ill remunerated. He gave up his seat in Parliament, and other employment (which was tenable for life by remaining in England), and went, with his family, in a merchant ship, to New Zealand, to support the just views of Government. But his proceedings there gave such umbrage to the New Zealand Company—then very powerful—that they occasioned his recall in 1846.

In 1848, Lord Stanley, in the House of Lords, took occasion to speak at considerable length, and very strongly, in favour of Captain Fitzroy; and in July of the same year, Lord Auckland directed him to attend to the new, and then experimental frigate, 'Arrogant,' to be fitted with a screw, and peculiar machinery. From that time, till she was commissioned by him, he continually superintended that ship's arrangements; all of which have answered satisfactorily, though many were quite new and original.

In 1854, a new branch office was established, as an experiment, at the Board of Trade, and Captain Fitzroy (now Admiral) was appointed to arrange and work out its objects, namely, collecting,

tabulating, and deducing results from meteorological observations made at sea.

Out of these accumulated details was originated by him the telegraphic system of Weather-warning or forecasting, with cautionary signals, which has extended since its commencement here in 1861, throughout Europe, and, under the ability of M. Leverrier, with the skill and tact of others, has been improved and extended so remarkably.

Internationally, M. Leverrier's daily bulletin has become practically useful, and is well worth the expense of daily transmission, by post, to persons interested. In studying the bulletin, care should be taken to make ample allowance for lapse of time between observations, when not simultaneous.

Admiral FitzRoy is a Fellow of the Royal Society, and of other scientific bodies; he has been especially honoured at the French Academy of Sciences, by his election as a Corresponding Member of the Institute; and, last autumn, the French Government transmitted through our Foreign Office and Admiralty, an admirable specimen of a travelling clock (*pendule de voyage*), as a testimonial of the services which have been rendered by him to the French Imperial Marine. This clock was sent from the French Minister at the instance of the Emperor. It shows four subjects besides time, and is elaborately beautiful in its workmanship and material.

There is a pointed and very gratifying allusion, in this work, conveyed from the French Marine authorities, which adverts to the earlier results of FitzRoy's hydrographic employments, especially in measurements by time for longitude.

Besides the 'Beagle's Voyages' and the 'Weather Book,' Admiral FitzRoy has written papers on various subjects connected with his professional avocations, on Steam and Naval Architecture, Hydrography, Ethnology, Geographical subjects, and, latterly, Meteorology.

He has laboured to make the principal facts and conclusions of this somewhat complicated subject evident to all earnest inquirers. How far he has succeeded is shown in the great increase of interest taken by all classes, but especially the seafaring or maritime, in all that relates to the weather, and accessories to an acquaintance with its characteristics.

It is difficult to estimate the lives saved, and the property, on

the occasion of each successive storm on our coasts, of which warnings have been duly given by the signal drum, if not also by the forecasts published, daily, in most newspapers; but we find that a general confidence is expressed around the coasts of England, and those adjacent, in the successful results of these cautionary notices.



HUGH FALCONER, M.A., M.D., F.L.S., ETC.,
 VICE-PRESIDENT OF THE ROYAL SOCIETY.

SINCE the portrait on the opposite page was obtained by solar agency, the eminent man, then in life and health, of whom it is a faithful and enduring record, has been lost to us. On the 4th of February all that was mortal of him was consigned, in the presence of many sorrowing friends, to the earth, in the cemetery of Kensal Green.

“So foul and fair a day I have not seen.
 How far is it call'd to Forres?”

At this Forres—rendered classical to us—the late Hugh Falconer was born on the 29th of February, 1808; consequently, at the time of his death, on the morning of the 31st of January, 1865, he was within one month of completing his 57th year. It appears that Hugh Falconer was educated first at the grammar school of his native town, and in his earliest days he was remarkable for his love of natural objects. For four years he studied at the university of King's College, Aberdeen, and then, for a similar period, he was a medical student in the University of Edinburgh. From the former he received his M.A. degree, and at the age of twenty-one he took his M.D. degree, from the latter. While in Edinburgh natural history was his favourite study, and he profited greatly by the systematic instruction of Professors Jameson and Graham.

On leaving Edinburgh, Dr. Falconer was nominated assistant-surgeon in the Indian army, and appointed to the Bengal establishment. Previously to his departure for India, he availed him-

self of the collections of Indian fossils in London, and by the careful study of them, prepared himself for the work for which he was destined, and with which the name of Falconer is inseparably connected. He arrived at Calcutta in September, 1830, and early in 1831 he took his place amongst the scientific men of India, by contributing a paper on some fossil bones from Ava,—which were in the possession of the Asiatic Society of Bengal,—to a journal called ‘Gleanings in Science.’ In the same year Dr. Falconer was ordered to the military station of Meerut, and he was employed to take charge of a detachment of invalids proceeding to the temperate region of Landour, in the Himalayas. This duty compelled him to pass through Suharunpore, where a large botanic garden had been established, which was then under the charge of Dr. Royle. In 1832, Dr. Falconer was appointed to succeed Dr. Royle as superintendent of those gardens, he having previously officiated for him during his leave of absence.

Dr. Falconer was now placed in a position to carry out original researches in a field full of interest, and which was, to a large extent, untrodden. He almost immediately undertook an excursion to the sub-Himalayan range, and he discovered the fossil of a vertebrate animal in the Tertiary formation of the Sewalik Hills. This discovery having been made, Captain Cautley, who was previously aware of the evidences of organic life in those rocks, commenced a more extensive and systematic search, and, in conjunction with Dr. Falconer, made the first great discovery of those remarkable fossil remains, which add so much to the interest of the palæontological collection in the British Museum. In 1834, Dr. Falconer gave, in the ‘Journal of the Asiatic Society of Bengal,’ some account of the physical and geological features of the Sewalik Hills; and he then settled that these ranges belonged to the Tertiary formations, whereas previously they had been regarded as belonging to the New Red Sandstone age. In 1834, two East Indian officers, Baker and Durand, made the discovery of the vast bone deposits of that portion of the Sewaliks which is situated near the valley of Markunda. Dr. Falconer and his friend Captain Cautley were immediately in the field, and by their united efforts, they developed the most extraordinary fossil Fauna which had ever gladdened the eyes of the geologist. Mastodon, elephant, rhinoceros, hippopotamus, giraffe, camel, and the great

ruminating Sivatherium, were amongst the large quadrumana discovered,—with hyenas, wolves, and other carnivorous creatures, the remains of ostriches and cranes, together with saurian reptiles,—the most remarkable of all the discoveries being, however, the enormous tortoise, *Colossochelys Atlas*. The carapace of this mighty chelonian reptile measured twelve feet in length. An Indian myth informs us, that the world rests on the back of an elephant, and that this elephant stands on the back of a tortoise. Like our own legends of dragons and griffins, which have evidently some relation to those monstrous saurian reptiles which we find in a fossil state, this Oriental myth is probably related to this great fossil tortoise. Indeed, Dr. Falconer, whose researches into the duration of man on the earth have been most extensive, says ('Proceedings of the Zoological Society'), "there are fair grounds for entertaining the belief that the *Colossochelys Atlas* may have lived down to an early epoch of the human period, and become extinct since."

In the same year, 1834, a commission, acting on the advice of Dr. Falconer, recommended a trial of the culture of the tea-plant in India. Under his superintendence, sites were selected and the experiment made. The tea of Bengal is steadily becoming a most important export from the Presidency. In 1837, Dr. Falconer accompanied Burnes on his mission to Caubul, and then he proceeded to Cashmeer, and spent several months in examining the natural history of that fertile and beautiful valley. By the aid of Ahmed Shah, he traced one of the branches of the Indus to its source, and examined the glaciers of the great mountain-chain at an elevation of 28,000 feet. After this he returned to his botanic garden at Suharunpore. In 1842, Dr. Falconer suffered so severely in health, that he was compelled to obtain sick leave, and he returned to Europe. He brought with him his large collection of dried plants and fossil remains. Captain Cautley had also returned, and he had presented his great collection to the British Museum. The arrangement of these collections was entrusted to Dr. Falconer, and the Indian Court of Directors also employed him to arrange the palæontological collection in their Museum. The English Government and the India Board assisted Dr. Falconer in the production of his great illustrated work, entitled 'Fauna Antiqua Sivalensis;' nine parts of which were published between 1844 and 1847. The work is still incomplete; its

progress was interrupted by reason of the return of Dr. Falconer to India.

In 1848, on the retirement of Dr. Wallich, the subject of this memoir was appointed Superintendent of the Botanic Garden at Calcutta and Professor of Botany in the Medical College. Dr. Falconer was constantly employed by the Government in important inquiries. He is found reporting, in 1850, on the teak forests of Tenasserim, and in 1852 on the introduction of the quinine-yielding cinchonas to India. In 1854 he commenced, with Mr. Walker, a descriptive catalogue of the fossil collections in the Museum of the Asiatic Society of Bengal, which was published in 1859. In 1855 Dr. Falconer retired from the Indian service; and after visiting Syria, and the Crimea during the war, he returned to England.

Notwithstanding the wear upon his system, produced by many years of active life in India, he allowed himself but little repose, to restore his weakened energies. His mind was ever active, and few new discoveries were made in geology which did not attract his attention. This is shown by the numerous communications made by Dr. Falconer to the Geological and other learned societies.

Amongst the more important of his papers, may be named two memoirs published in the 'Quarterly Journal of the Geological Society,' on the Species of Mastodon and Elephant occurring in the fossil state in England, and a memoir on the Ossiferous Caves of Gower, which appeared in the same periodical. At the Cambridge meeting of the British Association in 1862, Dr. Falconer gave an account of *Elephas Melitensis*, the pigmy elephant of Malta, discovered, with other extinct mammals, in the ossiferous cave of Zebbug, and several papers bearing on the same subject appeared in the 'Natural History Review.' Dr. Falconer entered zealously into the discussion advanced by Professor Ramsay on the glacial origin of lakes, and combated his views; appealing to the evidences afforded by the conditions observed in the Himalayas against the power of glaciers to scoop out lake-basins.

The question of the day must be regarded as the Antiquity of Man, and this was to Dr. Falconer an old and familiar inquiry. He therefore has been, from the first, one of the most eager of the English geologists in this investigation. To him we are mainly

indebted for the careful exploration of the cave in the Limestone at Brixham. This work he undertook in 1858, in conjunction with Professor Ramsay, Mr. Bristow, and Mr. Pengelly, and he drew up the interesting Report which was made to the Councils of the Royal and the Geological Societies. In 1859, Dr. Falconer examined the ossiferous caves of Sicily, and brought to light many works of man, resembling in form the obsidian knives from Mexico, and the flint knives found in the old barrows of this country, mixed with the remains of extinct animals. It was about this time that he visited the valley of the Somme, and examined the remarkable collection of M. Boucher de Perthes. Satisfied that the flints (the *haches*) were really worked by man, and bore all the impress of age, he urged upon Mr. Prestwich a careful examination of this remarkable deposit. The result of this will be found in the Philosophical Transactions for 1859. In 1863, Dr. Falconer took a prominent part in the discussion of the question which arose out of the discovery of a human jaw at Moulin-Quignon, on the authenticity of which he expressed his doubts. In the 'Athenæum' for the 4th April, 1863, will be found a communication headed, "Primeval Man, what led to the Question?" in which Dr. Falconer carefully examines all the evidence up to that time. A discussion with Sir Charles Lyell ensued, which is chiefly remarkable for the clearness with which Dr. Falconer expresses his conviction, and the caution with which he advances his suggestions. In the same journal, of May 23rd, we find the following note on the jaw:—"I am of opinion that the finding of the human jaw at Moulin-Quignon is authentic, but that the characters which it presents, taken in connection with the conditions under which it lay, are not consistent with the said jaw being of any very great antiquity.—HUGH FALCONER, Abbeville, May 13, 1863."

This may be regarded as almost the last work of him, whose loss we deplore. In September of last year, Dr. Falconer, accompanied by Professor Busk, proceeded to Gibraltar, to examine the caves discovered there. The results obtained were of great value, and Dr. Falconer intended to have described those, in conjunction with his previous Sicilian researches, in a work devoted to the Cave Fauna of the Mediterranean. This he was not permitted to complete. On the 19th of January, Dr. Falconer returned from a Council Meeting of the Royal Society, depressed

in spirits and suffering from fever. Acute rheumatism ensued, and this, complicated with bronchitis, and eventually congestion of the lungs, terminated the life of a busy man, on the morning of the 31st.

"Thou art fled
Like some frail exhalation, which the dawn
Robes in its golden beams. Ah! thou hast fled!
The child of grace and genius."





WILLIAM FARR, M.D., D.C.L., F.R.S.,

SUPERINTENDENT OF THE STATISTICAL DEPARTMENT OF THE
GENERAL REGISTER OFFICE.

THE late Prince Consort, when presiding over the International Statistical Congress in London in 1860, said that the statisticians of Europe were laying "the foundation of an edifice, necessarily slow of construction, and requiring, for generations to come, laborious and persevering exertion, intended, as it is, for the promotion of human happiness, by leading to the discovery of those eternal laws upon which that universal happiness is dependent."

No one has done more towards securing this elevated position for statistics amongst the sciences, than the subject of this memoir. Our fathers did not appreciate the value of the registration of small facts and minute observations; and because they did not appear to promise any immediate advantages, they were neglected by them. Consequently, until a recent period, our statistical statements have been rather guesses at the truth, than the results of careful inquiry, and, whether relating to people or property, they are found to be vague and unsatisfactory. A few men, convinced of the value of obtaining with all care, and in detail, every fact connected with population or with property, which could be expressed in numbers, originated the system of statistical inquiry, the value of which is now universally admitted. Amongst those who are most active in promoting this, and in securing for the inquiry scientific accuracy, Dr. Farr stands especially prominent.

William Farr was born at Kenley, in Shropshire, on the 30th of November, 1807, and from the very early age of two years he was educated by Mr. Joseph Price, of Dorrington, near Shrewsbury. Subsequently the Rev. J. J. Benyon directed his studies. In 1826, Mr. Farr became the pupil of Mr. T. Sutton, surgeon, of

the Salop Infirmary, and he read the medical and scientific works of that day, with Dr. J. Webster, a young but very talented physician. After pursuing this system of study for three years, he went to Paris, and in 1829 entered as a student in that city. Mr. Farr was fortunate in the period chosen for his sojourn in the French capital. A gifted band of teachers was then gathered together, and during the two years which he remained in Paris he studied medical science under Orfila, Dupuytren, Louis, and Lisfranc. He listened to the lectures of Andral on Hygiene, of Gay-Lussac and Thenard on Chemistry, Pouillet on Natural Philosophy, of Cuvier on the Natural Sciences, and of Geoffroy St. Hilaire, Dumeril, and Blainville on Comparative Anatomy. Mr. Farr also studied with close attention the lectures on History and Literature delivered by Guizot and Villemain. It was, without doubt, under the influence of those minds,—all of them remarkable for the exactness of their inquiries, and their powers of generalization,—that Mr. Farr received that inclination towards medical statistics in which he has since distinguished himself.

After travelling through Switzerland, Mr. Farr returned to London in 1831, and entered University College, where for two years he studied under Grant, Carswell, Turner, Elliotson, and others who distinguished themselves as teachers in that excellent medical school. After this for a short time he filled the office of house-surgeon at the Shrewsbury Infirmary, but finding this too limited a field for his active mind to work in, he returned to London. In this metropolis he commenced practice, and became a teacher. A course of lectures were attempted by him on Hygiene, but these were not successful, as the public health was not then a recognized subject in the schools. He, however, continued to devote himself to medicine and statistics with his usual assiduity; and even at this time the influence of his knowledge was felt.

The 'Medical Annual' was edited by Mr. Farr, and, in connection with his friend Dr. R. D. Thomson, in 1837, the 'British Annals of Medicine.' In that year Mr. McCulloch published his 'Statistics of the British Empire,' and to this work Mr. Farr contributed the article "Vital Statistics." In 1837 the registration of all the deaths, and of the causes of death, in England was commenced, and in the following year Mr. Farr received an appointment in the General Register Office under Mr. Lister, who was the first Registrar-General. Since that period he has been made by Mr.

Graham, who is the second Registrar-General, the superintendent of a statistical department which comprises many men of talent. In this department is compiled "The Quarterly Returns of Births, Deaths, and Marriages," and the "Annual Abstracts." In 1847 the honorary degree of Doctor of Medicine was bestowed upon this eminent medical statist by the University of New York.

Dr. Farr was now placed in the position for which he had specially trained his mind, and the result of this fortunate selection of the right man, has been shown by his numerous and valuable labours. Amongst the more important of his published works may be named the following:—'A New Statistical Nosology' (1839); 'Reports on Public Health and Causes of Death'; 'Report on Epidemic Cholera of 1848-1849' (1852); 'Sections of the Report on Population, etc., Census for 1851'; 'On the Construction of Life-Tables, illustrated by a new Life-Table of the Healthy Districts of England,' in Transactions of the Royal Society, 1859; 'Reports on the Programme and Proceedings of the International Statistical Congress, 1860'; 'Sections of the Report on the Census of 1861'; 'Reports on Army Medical Statistics, and on the Health of the Army in India.' Dr. Farr has also written on the 'Finance of Life Assurance,' and on the 'Income Tax.' It should be mentioned that Dr. Farr was appointed, with Mr. Horace Mann, one of the Assistant Commissioners to the Registrar-General in taking the census of Great Britain in 1851; that he was again similarly associated with the Registrar-General in taking the census of 1861; and that with Lord Herbert he sat on the commission for inquiry into the sanitary state of the British army in India, and, as above stated, he wrote the statistical part of the Report.

The statisticians of Europe had been for some time endeavouring to organize a uniform plan for collecting and classifying statistical returns, and to this end it was found desirable to arrange occasional meetings in different countries. Through the instrumentality mainly of M. Quetelet, a Statistical Congress was organized; in this he was strongly assisted by King Leopold of Belgium. In 1860, mainly through the exertions of Dr. Farr, the International Statistical Congress met in London, under the presidency of His late Royal Highness the Prince Consort. This was the fourth meeting; the first having been held in Brussels, the second in Paris, and the third in Vienna. Dr. Farr, Mr. Valpy, and Mr. Hammack were the secretaries, but to the first belongs the

Report which regulated its organization, and he was the editor of the Report of the Proceedings. This congress was most successful, and it certainly, by its influence, greatly advanced statistical science. Dr. Farr was one of the early supporters of the Statistical Society of London, has ever been one of its most active members, and is at present its treasurer. In 1855 he was elected a Fellow of the Royal Society, and in 1857 he received from Oxford the degree of D.C.L. In 1859 he contributed the valuable paper on Life Tables, named above, to the Transactions of the Royal Society. Any one referring to this memoir must be struck with the logical precision with which each explanatory statement is made, and the perspicuity which distinguishes his enunciations of the laws which regulate life and mortality.

In 1864 Dr. Farr wrote the Introduction to the 'English Life-Table,' described its construction, and laid down methods for determining values affected by time, life-contingencies, and commercial risks. This is the first national life-table of a great state, and its principal series were calculated and stereotyped by Schentz's calculating machine, which is in use at the General Register Office, Somerset House.

Dr. Farr was president of the section of the British Association devoted to economic science and statistics, during the last meeting at Bath. His address on the opening of the section on that occasion was a most able essay on economic science, and it was so highly appreciated that it has been printed *in extenso* in the Journal of the Statistical Society of London. The value of statistics is thus powerfully set forth in that address:—

“There can be no doubt that statistics, by disclosing the laws of life and reproduction, tend to improve the health and moral condition of the people, to point out the causes of disease, and to prove so plainly the utility of sanitary measures, that the people become willing to pay the expenses. In England the Registrar-General has, during twenty-seven years, shown how much the public health is deteriorated by destructive causes; so in our towns they are in the course of removal. . . . Our army has been invigorated by statistics; and the Commission over which Lord Herbert first, and, after his death, Lord Stanley, so ably presided, has proposed to endow India with the sanitary institutions of England.”



GEORGE GODWIN, F.R.S., F.S.A.

ON the 28th of January, 1815, George Godwin was born at Brompton, Middlesex, where his father had practised during many years as an architect. At the early age of thirteen years, he began the active business of life by entering his father's office, and substituting scholastic discipline by practical experience. Thus early placed in a position which demanded the exercise of his mental powers, George Godwin learnt self-reliance, and, happily, being gifted with great industry, his leisure hours were devoted to the acquirement of useful knowledge. A love of literary and scientific pursuits was a distinguishing trait in the boy, and, fortunately blended, these have distinguished the progress of the man. In 1835 we find the young architect contributing tales and essays to the 'Literary Union,' of which periodical he was joint editor. That light and elegant literature is not necessarily adverse to the pursuit of subjects of a practical and an exact nature, is proved by the fact that Mr. George Godwin, in 1836, received the first medal of the Institute of British Architects for an essay on Concrete. This was the result of close observation, and it has remained a standard authority on this subject, not only in this country but in France and Italy, into the languages of which countries it was translated from the Transactions of the Institute. In 1836 and 1837 Mr. Godwin was active in originating the Art Union of London, to which, from the year 1839, he has acted as chief Honorary Secretary. In the twenty-eighth annual report, written by Mr. Godwin, we read, "Its (the Art Union's) original promoters felt, that in proportion as the public taste was cultivated, so necessarily would a knowledge of the real qualities

of art increase, so would artistic labours be more and more appreciated, so would the producers of such works be sympathized with and fostered. The result has unquestionably justified their expectations." When we note the results, which have arisen during the twenty-eight years that the Art Union has been exerting its influence, this may surely be echoed. The excellent works of art diffused over the land, have, like all efforts of mind, carried with them some of the spirit by which they were created, and the love of the beautiful has become more general, while a higher and a purer tone has been imparted unto all. The projectors of the Art Union may well be satisfied with their work, and the subject of this notice, especially, must feel that his labours have their reward. While the public taste has been improved, the artist has been placed in possession of that which is less meteoric than fame,—the creations of his mind, the productions of his hands, have been transmuted into gold. When we hear that the secretaries of the Art Union have, in one morning, paid £10,000 for works of art, it is certain that artists have been greatly benefited. During the years 1845 to 1848 the existence of the Art Union was threatened, and it was only by the unwearied exertions of Mr. Godwin, with those of his colleagues, and by his correspondence and interviews with the Government, that it was preserved. This period of trial terminated in securing for the Art Union the sanction of an Act of Parliament and a Charter. With an income of above £12,000 per annum it promises a long continuance of its good work.

The active mind of Mr. Godwin, seizing on each passing event, produced, in 1837, 'An Appeal to the Public on the Subject of Railways.' In 1838 he commenced a history and description of the ecclesiastical edifices of the metropolis, published under the title of 'The Churches of London.' This important work, in two volumes, was illustrated with plates, from drawings by Mackenzie and Billings.

In 1859 Mr. Godwin was elected a Fellow of the Society of Antiquaries, in the following year he became a Fellow of the Royal Society; and in the same year the Société Libre des Beaux-Arts, of Paris, awarded him a medal for his published works. For many years Mr. Godwin frequently contributed papers to the meetings of the Institute of British Architects, and other societies. He was also a very constant writer in several periodicals of the

day devoted to art and architecture, amongst others, the 'Art Journal,' and the 'Civil Engineer's and Architect's Journal.' His contributions included notices of the buildings of Belgium, Normandy, Poitiers, and Angoulême. Mr. Godwin especially drew attention to the "masons' marks," which, although existing largely on all the fine old buildings, had been strangely overlooked. His essay on these was printed by the Society of Antiquaries in the 'Archæologia,' in 1843. In this essay he shows, how persistently marks, of the same general characters, had been used by the masons of all ages,—thus proving, at the same time, the high antiquity of the custom of using marks, and the existence of a system by which these marks were regulated in the craft.

Amidst his varied labours,—showing the activity of his mind, and proving his great industry,—we find Mr. Godwin as the author of the farce of 'The Last Day,' which was played at the Olympic Theatre, in October, 1840, and of some other dramas. In 1844 Mr. Godwin published a collection of tales, under the title of 'Facts and Fancies,' and he subsequently contributed a memoir of John Bunyan to an edition of 'The Pilgrim's Progress' which he edited, conjointly with Mr. Lewis Pocock, his fellow-secretary of the London Art Union.

The editorship of the 'Builder,' just before the completion of the second volume of that periodical, in 1844, passed over to Mr. Godwin. The position which that journal has attained, speaks most favourably for the judicious manner in which it has been conducted. It has contributed in a most marked manner to the improvement of architecture; and certainly much of the difference observable now in the London buildings, and in those which existed twenty years since, is due to the constant advocacy of a higher style of art by its editor. The collateral branches of art and science have also been advanced by the careful attention which has been constantly given to them in the pages of the 'Builder.' In this journal Mr. Godwin still continues to urge the advancement of his profession, and to instil correct ideas into the public mind, in relation to the adaptation of the different styles of architecture to situations and conditions. Amongst other works written by Mr. Godwin, his 'Buildings and Monuments, Modern and Mediæval,' must not be forgotten. A popular account of the styles of architecture, originally written as a series of letters to a lady, appeared in 1853, under the title of 'History in Ruins.' This

was, as the author himself expresses it, "an endeavour to convey the history of architecture to general readers, in popular language and a pleasant manner, and to interest them in an art which affects not merely our homes and the provision of structures for the fitting discharge of public duties, but the artistic progress, the æsthetic culture, and the refined enjoyments of a people."

With the advance of civilization, people began to see that humanity and morality pointed to some improvement in the dwellings of the poorer classes. They learnt, too, the lesson that, for their own safety, it was important that the back lanes and dark courts of a great city should be purified, both morally and physically. It will be remembered that in 1851 H.R.H. Prince Albert did his part in directing attention to what should be done, by the model dwelling which he erected in Hyde Park. Mr. Godwin too was active in this work, and in 1854, under the title of 'London Shadows,' he issued part of the result of an 'Inquiry into the Condition of the Houses of the Poor,' which he made in 1853. In this work he treats of the sad and degraded condition of a large class of our population, and drew attention to facts which had hardly until then been set forth with the same cogency and truth. This work was followed by 'Town Swamps and Social Bridges,' which, as the title at once shows, was devoted to the same benevolent end. Few works shadow forth more strikingly than do those written by Mr. Godwin the thoughtlessness of those, who would not like to be called other than thinking men. "After the writer had laid bare, systematically and constantly, for years, the frightful condition of various parts of this proud, populous, wealthy, overgrown London," he still finds, "at the back of the bright thoroughfares where fashion disports herself, the festers and malignant sores with which the body of society is spotted." To the end of removing some of these, Mr. Godwin wrote and continues to write. This powerful little work concludes with these emphatic words, "We may dry up many sources of crime by education, and by the same means may lessen the amount of sorrow and lengthen life. Here surely are good wages to be had for good work; we may 'drain the swamps and increase the bridges.'" Much good has been effected, but there is still much to do, and feeling this, Mr. Godwin has again used his pen, in a work published in 1864, called 'Another Blow for Life.' In this book he once more calls attention to the "way in which

life is shortened, health depreciated, happiness prevented, how the manners are degraded, crime and sorrow increased," and we earnestly pray that his call for aid will not be in vain. Such have been the varied labours of George Godwin, and let us hope that he may long continue in health to labour, until he reaps the high reward of seeing many a swamp drained and many a bridge built.

We have, as yet, noticed Mr. Godwin's literary works only. At the same time as he has been engaged in his endeavours to improve the public taste, to lessen public evils, and to advance art by his pen, he has been giving us examples of architecture in various styles and in varied places. In 1847 the second premium was awarded to Mr. Godwin and Mr. Harris for the buildings of the Colney Hatch Lunatic Asylum. He designed and erected St. Mary's Church, West Brompton, and the Infant Schools in Brompton, and at Redcliff, Bristol. He has had under his care, since the year 1846, the magnificent church of St. Mary, Redcliff, where the north porch and the south porch are the most important portions of the building now finished. Mr. Godwin has directed the restoration of the tower of the old church at Fulham, St. Mary's Church, Ware, Standon Church, and others. He has also erected some farm buildings of an improved construction, and numerous residences. When Charles Kean sought to represent Shakspeare with all the modern advantages of science and art which were within his reach, he invited Mr. Godwin to aid him with his architectural knowledge, and to his suggestions and drawings we are mainly indebted for those finely illustrative scenes which distinguished 'Macbeth,' 'The Winter's Tale,' and 'Henry VIII.'

Within the same period, we shall not find many men who have played so many parts, and all so well. Architecture has been advanced; art has been greatly aided; sanitary improvements have been urged onwards, and consequently the sum of human happiness has been increased by his labours.

In 1851 Mr. Godwin was one of the jurors for the class of mineral substances used in building, and he was one of the active promoters of the Great Exhibition Memorial which stands in the gardens of the Horticultural Society. We cannot close this short notice of the life of a busy man more appropriately than by quoting the words of John Britton in dedicating a small work to

Mr. Godwin: "I have carefully and anxiously watched your career and conduct in different relations of life, and more particularly in your profession, and the persevering advocacy of its intellectual and moral obligations and duties. Every move in that career has been onward and upward."



CAPTAIN RICHARD BURTON,

F.R.G.S., F.E.S., F.A.S.L., F.R.A.S., F.A.S. BOMBAY, F. BERLIN A. OF S.

IN the foremost rank of the noble band of illustrious explorers of which England is so justly proud, stands Captain Richard Francis Burton, late of Her Majesty's Bombay Army (18th Native Infantry), Chief of the Staff of Irregular Cavalry in the Crimea, late Her Britannic Majesty's Consul on the West Coast of Africa, and present Consul at Santos, Brazils, the celebrated Eastern traveller, author, linguist, and gold medallist of the English and French Royal Geographical Societies. He is descended on the father's side from the Burtons of Barker Hill, near Shap, in Westmoreland, which family owns a common ancestor with the Burtons of Carlow and Northamptonshire; and on the maternal side with the Montmorencis, Lejeunes, and Drelincourts, French Huguenots (*temp.* Louis XIV.). His grandfather was the Rev. Edward Burton, Rector of Tuam, in Galway (who, with his brother, Bishop Burton, of Tuam, were the first of this branch to settle in Ireland); he married Maria Margaretta Campbell, daughter, by a Lejeune, of Dr. John Campbell, LL.D., Vicar-General of Tuam. Their son was Richard Burton's father, Lieutenant-Colonel Joseph Netterville Burton, of the 36th Regiment, who married one of the Beckwith Bakers, of Nottinghamshire, a descendant, on her mother's side, of the Scotch Macleans and Macgregors.

Richard Francis Burton was born on the 19th of March, 1821, at Barham House, Herts. His education as traveller and linguist commenced in his fifth year, when he was taken to the Continent, where, with the exception of a few months passed at a school at Richmond, in Surrey, he continued until the age of nineteen, tra-

velling through France, Switzerland, Germany, and Italy, thus acquiring a practical knowledge of modern European languages.

In 1840 he became a student of Trinity College, Oxford, where he remained until 1842. His studies hitherto, whether abroad or at home, had been directed towards his entering the Church. A commission in the Indian Army having, however, been offered him, he accepted it, and found himself, upon reaching Bombay, posted to the 18th Bombay Native Infantry, then at Baroda, in Guzerat. This was during the Affghan War. Within the first year of his Indian sojourn, he passed examinations in Hindostanee and Guzeratee. At a somewhat later period this indefatigable scholar and soldier passed his examination in four other Oriental languages and dialects—Persian, Maharattee, Sindhee, and Punjaubee.

In 1844 Lieutenant Burton proceeded to Sindh with the 18th Native Infantry, and was soon placed upon the Staff of Sir Charles Napier, under Colonel Walter Scott. With the exception of a visit to Goa and the Neilgherries—the visit which gave rise to Lieutenant Burton's work entitled 'Goa and the Blue Mountains,' published in 1851—the five following years were spent by him in the Sindh Canal Survey, and in collecting materials for his works, 'The History of Sindh, or the Races which inhabit the Valley of the Indus;' 'Sindh, or the Unhappy Valley;' and 'Falconry in the Valley of the Indus.'

With a view for employment on active service in Mooltan, he, in 1849, published in the Journal of the Bombay Asiatic Society 'A Grammar of the Mooltanee Language,' together with other valuable philological contributions. He joined his regiment when marching upon Mooltan to attack the Sikhs, with whom he had been affiliated. The "hot season" and the march up the valley of the Indus were causes of fearful suffering to our gallant and erudite soldier. He was attacked by severe ophthalmia, the result of mental and physical over-fatigue, and thus by sickness compelled, in 1849, to return to Europe *viâ* the Cape.

Residing in France principally upon his return, he there was awarded the *Brevet de pointe* for the excellence of his swordsmanship. It has been observed of Captain Burton, that as horseman, swordsman, and marksman, no soldier can surpass, and few equal him. In 1853 he published a system of bayonet exercise, which, although undervalued at the time, has since been made use of by the Horse-Guards.

In April, 1853, generously supported by the Royal Geographical Society, Richard Burton prepared to penetrate into Arabia under circumstances unusually strange, and peculiarly well adapted to facilitate his object in view—study of “the inner life of the Moslem.” With this expedition opens the most romantic chapter in the history of this remarkable man.

He had long felt within himself the qualifications, mental and physical, which are needed for the exploration of dangerous regions, difficult of access. Not alone had his previous education and career specially prepared him for such enterprises, but his mind, at once practical and imaginative, grasping every contingency likely to arise, he had sought to accomplish himself thoroughly for his mission in the most trifling as well as most important directions. Thus it is related that he took lessons from a blacksmith in order not only to be prepared to shoe his horse, in case of need, but also to make its shoes.

In order to penetrate with safety into Arabia, it was necessary that our traveller should be skilfully disguised; indeed, he appears to have assumed and sustained various Oriental characters. He left London as a Persian, and travelled to Southampton with Captain Grindlay as his interpreter. Landing at Alexandria, he was received in the house of John Larking, Esq., the only person throughout Richard Burton's perilous expedition who was acquainted with his secret. To Cairo he went as a Dervish, living there as a native until the time of the departure of the Pilgrims. Unable, as he had intended, to cross Arabia on account of the disturbances caused by the Russian war, he performed the pilgrimage described in his work, published in 1855, entitled ‘Pilgrimage to Mecca and Medinah.’ The peculiarity of this pilgrimage consists in the Holy City having been visited by this bold and subtle Englishman as one of “the Faithful.” He was thus the first European who had beheld the inner and religious life of the Moslem without having abjured his own faith.

We have said that various were the Oriental characters assumed by this traveller of versatile genius. The one easiest sustained appears to have been that of half-Arab half-Iranian, whose brethren throng the northern shores of the Persian Gulf. With hair falling on his shoulders, long beard, face, hands, arms, and legs stained with a thin coat of henna, Oriental dress, spear in hand, pistols in belt, such was Richard Burton, *alias* Mira Abdullah the Bushiri,

as he commenced his adventurous life, and who has been from north to south, from east to west, and mixed with all nations and tribes, without betraying himself in manners, customs, or speech, often when death must have followed on discovery of his true character.

Returning to Egypt for a few months, he proceeded to Bombay, and, assisted by Lord Elphinstone, organized an expedition into Somali-Land, East Africa, taking Lieutenant (afterward Captain) Speke as second in command. The object was to visit Harar, the Timbuctoo of East Africa, the exploration of which had in vain been attempted by thirty travellers. Disguised as an Arab, he was successful, and returned to Aden with the first authentic notices of this mysterious city. The Somali Expedition terminated disastrously. They were attacked by the natives: one of the party was killed; Burton and Speke dangerously wounded. Terrible sufferings in the desert were endured from want of water and food—sufferings almost unto death.

The severe nature of Lieutenant Burton's wounds compelled his return to England. Having read an account of his explorations before the Royal Geographical Society, he again left his native land, this time bound for the Crimea, and landed at Balaklava on the day following Lord Raglan's death. In the Crimea he was employed as Chief of the Staff of the much-calumniated body of Irregular Cavalry, which indeed he assisted in organizing. He also, by order of General Beatson, volunteered to Lord Stratford de Redcliffe to convoy any amount of provision for the relief of Kars. But Kars was already doomed. General Beatson and his Staff were compelled, by a complication of small intrigues, to resign, and the subject of this memoir returned to England.

At the instance of the Royal Geographical Society, Lord Clarendon, Secretary of State for Foreign Affairs, supplied Captain Burton with funds for an exploration of the Lake Region of Central Africa. In October, 1856, he set out for Bombay, accompanied, as second in command, by his former companion, Captain Speke, and landed at Zanzibar on December 19th, 1856. Energetically assisted by the late Lieutenant-Colonel Hammerton, Her Majesty's Consul at Zanzibar, the explorers made a tentative expedition to the regions about Mombas. Struck down, however, by dangerous fever, they were forced to return to their head quarters. They had started on the 5th of January, 1857, and returned March 6th, 1857.

After a prolonged organization, once more these dauntless explorers, Captains Burton and Speke, set forth, bound for the regions of the far interior, into which only one European, M. Maizan, a French naval officer, had attempted to penetrate,—he having been cruelly murdered at the very commencement of his journey. The result of this memorable expedition, which occupied the years from 1856 to 1859, is well known to the world through Captain Burton's work, 'The Lake Regions of Equatorial Africa,' published in 1860, and through the volume of the *Journal of the Royal Geographical Society* for 1860.

During these African explorations Captain Burton felt severely the effects of the climate, being attacked by fever twenty-one times, and having suffered temporarily from paralysis and stone blindness.

In May, 1859, this brave traveller returned to England, where he immediately proposed another expedition to the sources of the Nile. The Royal Geographical Society did not, however, encourage the proposal.

In April, 1860, Captain Burton started for the United States, and passing through the country of the Mormons, visited California. He returned to England in December, 1860, having spent six weeks with Brigham Young, the Mormon prophet, at the Great Salt Lake City, and travelled during his American expedition 25,000 miles. The experiences of this journey were given forth to the public in 1861, in a work entitled 'The City of the Saints.'

In 1861, Captain Burton received from Earl Russell an offer of the Consulship for Fernando Po, in the Bight of Biafra, on the west coast of Africa. The Bight, six hundred miles in extent, was under Captain Burton's jurisdiction, and much trouble was caused the Consul by the lawless conduct of rough, unruly traders, and of the rum-corrupted natives. Nevertheless, in spite of pressure of business and of the dangerous character of the climate, our enthusiastic traveller still pursued his explorations with ardour. He visited the coast from Bathurst, on the Gambia, to St. Paul de Loanda, in Angola, and the Congo River. He marched up to Abeokuta in December, 1861. He ascended the Cameroon Mountain, the wonderful extinct volcano described by Hanno the Carthaginian. He advised the English Government to establish there a sanatorium for the West Coast, and a convict station for felons, where they might be made useful in constructing roads

and cultivating cotton and chocolate. In 1863 were published the result of Captain Burton's labours in Abeokuta and Cameroon Mountains. After visiting the cannibal Mpangwe (the Fans of Du Chaillu) in April, 1863, he proceeded to Benin city, unknown to the European world since the death of Belzoni, and his description of the surrounding regions appeared in 'Fraser's Magazine' for February, March, and April, 1863, under the title of "Wanderings in West Africa." He next ascended the Elephant Mountain, an account of which was read before the Royal Geographical Society.

After a brief visit to England, for the re-establishment of his health, and a trip to Madeira and Teneriffe, Captain Burton visited the whole line of lagoons between Lagos and the Volta River, and spent a few days with the King of Dahome. Invited by this potentate to pass the three winter months with him, and directed by the Foreign Office, he returned to Agbome as British Commissioner, with presents from Her Majesty, and paid his stipulated visits, witnessing the celebrated annual "customs," which he has described in 'A Mission to Gelele, King of Dahome,' published in 1864. Captain Burton's last work upon Africa is a collection of five thousand proverbs, being an attempt to make the Africans delineate themselves.

Having spent ten years in Africa, Captain Burton has been transferred by the Foreign Office to the Consulship of Santos, in the Brazils.

Captain Burton married Isabel, daughter of Henry Raymond Arundell, Esq. (nephew of the ninth Lord Arundell of Wardour), by Eliza, only surviving sister of the present Sir Robert Gerard Bart., of Garswood, Lancashire.



GENERAL SIR DE LACY EVANS, G.C.B.

GENERAL Sir De Lacy Evans, G.C.B., is the son of the late John Evans, Esq., of Miltown, Ireland, and was born in that country in 1787, and educated at Woolwich. He entered the army in 1807. He has served with eight armies, and has been present in fifty considerable battles in Europe, Asia, and America. His military career commenced in India (1807-1810), where he took part in the operations against Ameer Khan and the Pindarries. He was also at the capture of the Mauritius. In 1810 he joined the Peninsular army, under Wellington, and accompanied it in its retreat from Burgos. He took part in nearly all the principal battles in Spain and Portugal, and, after its advance, fought at Toulouse. At the action on the Hormaza he was wounded; at Toulouse, as previously at the investment of Bayonne, he had a horse shot under him. He gained considerable distinction by volunteering for storming parties. Besides the war medal with three clasps, for Vittoria, Pyrenees, and Toulouse, he received his company in January, Majority in May, and Lieutenant-Colonelcy in June, 1815, for services performed against the enemy. In the spring of 1814 he left Wellington's army, being ordered to the United States, with which Great Britain was then at war. At the battle of Bladensburg he had two horses shot under him; at Washington, with a hundred light infantry, he forced Congress House; and took part in the attack on Baltimore. He was the only volunteer of the army who accompanied the boats' crews of the English fleet which boarded and captured the strongly armed American sloops-of-war posted for the defence of Lake Borgne, before New Orleans. In December, 1814, and again in January, 1815, he was severely wounded in the unsuccessful assault on that town.

Returning to Europe, he joined the army assembled to meet the forces of Buonaparte, was engaged at Quatre-Bras, in the retreat towards Brussels on the 17th, and at the battle of Waterloo, where he had two horses killed under him. He advanced with the army to Paris, and remained on the staff during the occupation of that city by the allied armies.

In 1831, General Sir De Lacy Evans appeared again before the world, but in a new character,—that of a politician. He entered Parliament as the Liberal member for Rye. In 1832 he again offered himself as member for Rye, but was thrown out for that borough, as well as for Westminster, to which city he had also offered himself as a candidate. In May, 1833, he was returned, however, by the constituency of Westminster, defeating Sir John Cam Hobhouse, who had accepted the Chiltern Hundreds.

General Sir De Lacy Evans was still Member for Westminster when, in May, 1835, General Alva, Minister of the Queen of Spain at the British Court, solicited from the English Government permission to raise a military force in this country, to be auxiliary to the Queen's army. The cause of the child, afterwards Queen Isabella II., and of her mother, the Queen-Regent Christina, was generally identified with the cause of freedom and constitutional government in Spain. The Liberal Minister of that day granted the ambassador's request, and an order in council, dated June 10th, 1835, appeared in the 'Gazette,' authorizing the levy of 10,000 men, and expressing the desire of King William IV. that his subjects should take part with the Queen of Spain, his ally, by entering the new corps. The command of the force, which became known as the British Legion, was offered to the distinguished officer the subject of this biographical sketch, who consulted with his constituents, and with their consent accepted it.

By the urgent desire of the Spanish Government, the Legion hastened its departure from England, the ministry at Madrid anticipating increase of political power from the presence of English forces upon Spanish soil; nor was this expectation unfounded.

The term of enlistment for the Spanish Legion was two years. It was a period of alternating good and ill fortune, in which fearful sufferings were endured and invincible courage displayed. Marshal Harispe, an old General of the French Empire, thus writes to the undaunted Commander of the Legion upon the occasion of his engagement at St. Sebastian:—"I have known for

a long time the position you have carried ; whatever may be the losses you have sustained, the results of this combat reflect the greatest honour on the English soldiers, and, above all, on the officers, who have given such brilliant proofs of devotion and intrepidity."

At the termination of the two years, the troops were brought home at the expense of the British Government. On resuming his seat in Parliament, the ex-commander of the Spanish Legion announced that "no prisoners had been taken from the Legion in action, nor any part of its artillery or equipage captured by the Carlists ;" that "the Legion, however, had taken twenty-seven pieces of artillery from the enemy, and made eleven hundred prisoners, whose lives were spared." The gallant ex-commander received from his sovereign the Cross of Commander of the Bath, and from the Spanish Government the Grand Crosses of St. Ferdinand and Charles.

General Sir De Lacy Evans was again returned for Westminster in 1846 and in 1852. Whilst in Spain he attained the rank of Colonel in the English army, and in 1846 became a Major-General.

Upon the breaking out of war (1854) in the Crimea, this distinguished soldier was appointed to command the Second Division of the Eastern Army, with the rank of Lieutenant-General. His division distinguished itself by extraordinary bravery at the battle of the Alma, and was led by its commander across the river under a murderous fire : the General himself received a contusion of the right shoulder, and his troops suffered fearfully.

On the 26th of October, during the siege of Sebastopol, his division was attacked by a force of Russians amounting to six thousand men, marched forth from the town purposely for this attack upon the Third Division. The Russians were, however, put to rout in a short space of time, and driven over the ridges down towards the head of the Bay of Sebastopol. The loss of the English was eighty killed and wounded. Eighty Russian prisoners were taken ; but the total loss of the Russians was eight hundred. Lord Raglan reported this affair in high terms of eulogy. At the battle of Inkermann, General Sir De Lacy Evans greatly distinguished himself. At the time when the Russians attacked the Second Division and the battle of Inkermann commenced, the General, suffering from illness, was gone on board a vessel at Balaklava, leaving General Pennefather in command of his division.

Hearing that a battle was commencing, the sick veteran arose from his bed and hastened to the scene of action, there to assist by his presence and advice; in no way, however, seeking to rob General Pennefather of the honours of his position. The conduct of General Sir De Lacy Evans was highly commended in the despatch of the Minister of War which conveyed Her Majesty's thanks to the Eastern Army upon receipt of the news of this important engagement.

Returning invalided to England, the General received the thanks of Parliament for his services. He has been made a G.C.B., a Grand Officer of the Legion of Honour, and Grand Cross of the Military Order of Turkey.

Since the period of General Sir De Lacy Evans's return from the Crimea, he has sat in Parliament for the city of Westminster. We cannot conclude the sketch of the career of this distinguished soldier and politician more appropriately than in his own words, addressed to his constituents on the 4th of February, 1865, in which he informs them of his intention no longer to present himself as their candidate at the forthcoming election:—"The fact is, that whatever degree of energy I may have possessed is now exhausted, and I should no longer be capable of fulfilling the duties which would devolve upon me as your representative. Before I came into Parliament, now some thirty-five years back, I had expended some of the best years of my life as a soldier. A general peace was fortunately concluded. On becoming a member of the Legislature, I united myself heart and soul with the (then) Liberal party. This was not very advantageous to me as a professional man. From that period, however, followed a series of improvements in the laws and prosperity of this country, unequalled during any similar interval in the long course of our national history, or probably in the history of any other country. I allow myself to look back with, I trust, pardonable complacency to my honest, if not adroit, support of the great and salutary measures which led to these results. Knowing, as I had ample opportunities of doing, the pure and independent qualities by which you were actuated, I felt a pride in being associated with you personally and with your political interests. My career is now closing, and I shall only permit myself further to hope that you will continue to regard me as having been a faithful comrade in the often recurring contests for the promotion of the public welfare."



RICHARD PARTRIDGE, ESQ., F.R.S.,

PROFESSOR OF ANATOMY AT KING'S COLLEGE.

THE subject of this brief notice was born about 1805; of his early education there is very little of interest to the general reader to be communicated. Mr. Partridge passed his examination at the Royal College of Surgeons in 1827, and in 1837 he was admitted a Fellow of the Royal Society. We have not been able to discover any communication, on any subject connected with science, made by Mr. Partridge. He appears to have devoted, with praiseworthy zeal, all his attention to practical surgery, and by his success he has established himself in an eminent position; and he can unquestionably be numbered among those who have attained this high rank, not from mere theoretical head-knowledge, but through the force of actual practical acquaintance with the science which he has followed as his profession. In 1843 Mr. Partridge was elected a Fellow of the Royal College of Surgeons, and he became a Member of the Council in 1852. By his professional knowledge, Mr. Partridge secured the appointment of Professor of Anatomy at the Royal Academy of Arts, and at King's College. It will be in the memory of our readers that the Garibaldian Committee in this country selected Mr. Partridge as the surgeon whom they sent to examine the wound received by Garibaldi at the battle of Aspromonte. With the result of that visit they will also be acquainted. Although the circumstance of his having been chosen for this important service to the distinguished General has brought the name of Mr. Partridge more prominently before the British public, this must be looked on merely as a testimony to the very high position which he already held in the profession.



MARTIN FARQUHAR TUPPER, D.C.L., F.R.S.

MARTIN FARQUHAR TUPPER, widely known as the author of 'Proverbial Philosophy,' was born July 17, 1810, at No. 20, Devonshire Place, London. He is the eldest son of a medical man, highly esteemed in his day, and possessed of an extensive practice at the West-End, the late Martin Tupper, Esq., F.R.S., to whom a baronetcy was twice offered,—in the first instance by the Earl of Liverpool, in the second, under the administration of the Duke of Wellington. This honour was proffered to Mr. Tupper, not alone as a mark of distinction to himself, but also to his elder brother Peter, who had, during the Peninsular War, evinced great diplomatic ability, and to whom the baronetcy had been first presented, but by whom it had been declined, on account of his having no son.

The family of Tupper (spelt Töpfer in Germany, and Toupard in France and the Low Countries) is of ancient and honourable standing, and was originally German. During the persecution of the Lutheran Protestants by the Emperor Charles V., about the year 1548, the Töpfers were exiled from Hesse Cassel; and Heinrich Töpfer, the immediate ancestor of the "Proverbial Philosopher," settled, in 1551, in Guernsey, where he purchased an estate, and where his descendants still rank as one of the "first families" of the island. Rodolph Töpfer, of German celebrity, is of the same staunch stock.

During the reign of William and Mary, an ancestor of Martin Farquhar Tupper, in the direct line of ascent, received from the sovereign a gold medal and chain, with the privilege descending to his heirs of wearing medal and chain before the king, and of bearing them on a canton in his coat of arms. John Tupper

received this mark of distinction in recognition of an act of important service, rendered to the Crown at the risk of danger to life and limb. Recognizing the helpless condition of the French fleet, John Tupper conveyed intelligence of it to Admiral Russell, intelligence which led to the action and victory of La Hogue. This fact is slightly referred to by Macaulay in his History, but no mention is made of John Tupper, on his way to the British admiral, passing in an open boat through the midst of the French fleet, as it lay enveloped in dense fog.

A branch of the Tupper family sailed with the "Pilgrim Fathers" to the United States, where many of its descendants are still to be found. A Major John Tupper, an ancestor of the subject of this memoir, commanded the Marines at Bunker's Hill, after the death of Pitcairn, and gained for the corps their crown and laurel, as recorded at the Horse Guards. It is related that "by a strange coincidence there was in Washington's army another Major Tupper (originally of the same expatriated stock), and it is known to the family that when the cousins met in opposite ranks, some courtesies generously proffered by the 'rebel' were indignantly refused by the royalist."

The future popular author received his early education at the Charter House, during the period when the Rev. Dr. Russell filled the important post of Head-Master. In due course our youthful student was transferred to Christchurch, Oxford, where he took his degree of B.A. in 1832, of M.A. in 1835, and of D.C.L. at a more recent period, 1847. At Christchurch he was a member of the Aristotle class, so honourably associated with many distinguished men,—as the late Duke of Newcastle, the Marquis of Dalhousie, the Right Hon. W. E. Gladstone, Professors Jelf, Hill, and Vaughan, etc.

Having taken his degree of M.A., as we have already seen, Martin Tupper became a student at Lincoln's Inn, and was, in the Michaelmas term, 1835, called to the Bar. He has, however, never practised as a barrister. About the same period commences Mr. Tupper's literary career. He appears to have contributed to the periodicals of the day, but his first important essay in literature was a small volume entitled 'Sacra Poesis.'

In 1837 appeared 'Proverbial Philosophy,' which had been composed in a lawyer's chambers, 21, Old Square, Lincoln's Inn, during the year previous. This work, which has spread its

author's name far and wide, met at first with but moderate success in England, whilst in America it was almost a failure. Within a quarter of a century it has, however, passed through forty large editions in England, whilst nearly a million of copies have been sold in America. The annual sale of some 5000 copies witnesses to its almost unexampled popularity.

In 1835 Mr. Tupper was united in marriage with Isabella, only daughter of A. W. Devis, Esq., by whom he has four sons and three daughters.

In 1845 Mr. Tupper was elected a Fellow of the Royal Society. He has received the gold medal for science and literature from the King of Prussia; he has likewise been honoured by marks of distinction from other potentates.

Mr. Tupper resides near Guildford, in the parish of Albury, upon his own property, inherited from his mother, a direct descendant of Colonel Marris, who, in 1648, gallantly held Pomfret Castle for Charles I. against General Lambert.

In 1839 Mr. Tupper published 'A Modern Pyramid to commemorate a Septuagint of Worthies,' being sonnets and essays on seventy famous men and women; in 1841, 'An Author's Mind,' containing skeletons of thirty unpublished books; in 1844, 'The Crock of Gold,' 'The Twins,' 'Heart, a Social Novel,' tales illustrative of social vices, and which passed through numerous editions; in 1847, 'Probabilities, an Aid to Faith,' giving a new view of Christian evidences; 'A Thousand Lines,' 'Hactenus,' 'Geraldine,' 'Lyrics,' 'Ballads for the Times,' 'Things to Come,' 'A Dirge for Wellington,' 'Church Ballads,' 'White Slavery Ballads,' 'American Ballads,' 'Rifle Ballads,' 'King Alfred,' a patriotic play; 'King Alfred's Poems,' translated from the Anglo-Saxon into corresponding English metres. In 1856, 'Paterfamilias's Diary of Everybody's Tour,' 'The Rides and Reveries of Æsop Smith,' and 'Stephen Langton,' a biographical novel, which seeks, with much graphic painting, to delineate old England in the time of King John. He has also published 'Cithara,' a collection of lyrics headed by the 'Three Hundred Welcomes to the Princess of Wales,' 'Three Hundred Sonnets,' 'A Prophetic Ode;' and a multitude of fugitive pieces, both verse and prose, which have been scattered through newspapers and magazines.

The writings of Mr. Tupper, bearing the impress of an impulsive, enthusiastic nature, are, it is asserted, poured forth with

exceeding ease and rapidity, and partake much of the character of improvisation. That Mr. Tupper's sympathy is readily excited by the interest of the day, is not alone evinced in his numerous writings, both in prose and verse, but also by the acts of his life, as for instance the encouragement given by him to Liberian colonization, his bestowal of a gold medal for the encouragement of African literature, his active exertions in the Rifle Corps movement, etc.

A notice of the life and labours of Mr. Tupper would scarcely be complete without some reference to the disrespect with which he has been almost universally treated by the writers of the public press, to a degree indeed which almost amounts to persecution. Whether Mr. Tupper's works appeal invariably to the highest order of intellect, it is unnecessary to inquire, but assuredly some respect is due to a writer who, in an age remarkable for intellectual activity amongst all classes, has appealed so successfully to the public mind, has provided it with innocent and elevating *parabulum*, and has enjoyed so wide-spread—and on that account it may be inferred—deserved popularity, a popularity for which the author may at all events claim to be little indebted to contemporary criticism.



JOHN LONSDALE, D.D.,

BISHOP OF LICHFIELD.

JOHN LONSDALE, D.D., Bishop of Lichfield, was born in January, 1788, and is the eldest son of the late Rev. John Lonsdale, B.A., Vicar of Darfield, Yorkshire. It was at Heath School, near Halifax, and afterwards at Eton, that this future accomplished gentleman and dignitary of the Anglican Church received the rudiments of his education. In due course he passed on to King's College, Cambridge. In the years 1807 and 1809 he obtained Sir William Browne's medal for the best Latin ode; in the latter year he also obtained the Battie University Scholarship. He took the degree of B.A. in the year 1811, and that of M.A. in 1814. In January 1824 he took the degree of Bachelor of Divinity. His Lordship was formerly Fellow of King's College, Cambridge; and has been Prebendary of St. Paul's, Principal of King's College, London, Rector of Southfleet, Archdeacon of Middlesex, and Preacher at Lincoln's Inn. He was made D.D. and consecrated Bishop of Lichfield in 1843. In 1815 he married Mary, daughter of the John Bolland, Esq. Since his Lordship's elevation to the Bench, he has been a member of the Commission to inquire into the question of marriage with a deceased wife's sister, and has also been nominated as one of the Cambridge University Commissioners.



SIR WILLIAM EDMUND LOGAN, LL.D., F.R.S., F.G.S.

DIRECTOR-GENERAL OF THE GEOLOGICAL SURVEY OF CANADA.

THIS eminent geologist was born at Montreal, in Canada, in the year 1798. He was educated at the High School, Edinburgh, and in due course became a student in the University of that city. In 1818 Mr. Logan entered the mercantile office of his uncle, Mr. Hart Logan, of London, and he remained in that position for about ten years, attending steadily to his commercial duties, but at the same time cultivating those sciences with which he was subsequently to connect his name. In 1829 Mr. Logan went to Swansea, as manager of a large copper-smelting establishment there, and also to attend to coal-mining operations, in which his uncle was largely interested. Mr. Hart Logan dying in 1838, new arrangements were made with regard to those works, and Mr. Logan resigned his position as manager. During his residence of nine years in South Wales, Mr. Logan devoted himself to a most careful study of that great and important coal-field. When, in 1837, the Geological Survey of Great Britain commenced its labours in the coal district near Swansea, under the direction of Mr.—afterwards Sir Henry—De la Beche, the greatest assistance was obtained from Mr. Logan. Sir Henry De la Beche, in his memoir on the “Formation of Rocks in South Wales and South-western England,” published in the ‘Memoirs of the Geological Survey of Great Britain,’ acknowledges this in the following words:—“Mr. Logan, who had for several years previously been engaged in a careful examination of that district (which he completed, and, with true public spirit, presented to the Geological Survey, of whose maps, after due examination, it now forms a conspicuous part), pointed out to us the constant occurrence of

a marked kind of bed, with a peculiar fossil plant, as observable beneath all the coal-beds he had examined." The bed alluded to in this paragraph is the stratum of "under-clay," as it is called, which was first demonstrated by Mr. Logan to be the soil upon which the coal vegetation grew. Mr. Logan published an account of those beds; first, in the 'Annual Report of the Royal Institution of South Wales for 1839,' in which he also pointed out the analogy existing between our coal-beds and the masses of peat-moss, as they exist in the bogs of Ireland and elsewhere; secondly, in a memoir "On the Character of the Beds of Clay immediately below the Coal Seams of South Wales, and on the occurrence of Boulders of Coal in the Pennant Grit of that District," which was read at the meeting of the Geological Society of London, on 26th of February, 1840, and was published in their Transactions. In this memoir Mr. Logan showed that those beds vary in thickness from a few inches to more than ten feet, and are penetrated in all directions by a confused and tangled collection of the roots and leaves, as they may be, of the *Stigmaria ficoides*, these being frequently traceable to the main stem, which varies in diameter from about two inches to half a foot. The main stems are noticed as occurring nearer the top than the bottom of the bed, as usually of considerable length, the leaves or roots radiating from them in a tortuous irregular course to considerable distances, and so mingled with the under-clay, that it is not possible to cut out a cubic foot of it which does not contain portions of the plant. The discovery of those beds of under-clay, has proved of great importance in advancing our knowledge of the conditions under which our coal-beds were formed. They have been observed by other geologists since Mr. Logan drew attention to them in almost every other part of the world where the coal formations occur, so that very general conditions must have produced these beds over so large a portion of the earth's surface,—conditions with which the production of the coal itself would appear to be connected.

In 1841 Mr. Logan visited the coal-fields of Pennsylvania and of Nova Scotia, and in March, 1842, he read a paper on these coal-fields at a meeting of the Geological Society of London. In June of the same year, Mr. Logan communicated an important paper "On the Packing of the Ice on the River St. Lawrence; on a Landslip in the Modern Deposits of its Valley; and on the existence of Marine Shells in those Deposits as well as upon the

Mountains of Montreal." The great value of this paper was acknowledged, in the strongest terms, by George Stephenson, as having guided him in determining the requisite amount of defence for his great bridge in Canada. We have little conception in this country of the grand glacial phenomena which are presented by the packing and piling of the ice. These are graphically described by Mr. Logan. One example may be quoted:—"In Montreal is a newly-built *revêtement*, the top of which is twenty-three feet above the summer level of the river; but the ice broken by it, accumulates on the top of the terrace, and before the wall was erected the adjacent buildings were endangered, the ice sometimes breaking in at the windows of the second floor, even two hundred feet from the margin of the river. In one instance a warehouse of considerable strength and magnitude having been built without due protection, the great moving sheet of river-ice pushed it over as if it had been a house of cards."

About this time (1842) Mr. Logan began an examination of the older Palæozoic rocks of Canada. In 1843 the Provincial Government of Canada instituted a Geological Survey, of which Mr. Logan was appointed the Director-General,—he having refused for it, a very advantageous offer of a similar position in India. In the course of his investigations upon the rocks of the eastern townships, which are a continuation of those of New England, Mr. Logan has shown, that so far from being, as had been supposed, primitive Azoic rocks, they are altered and crystallized Palæozoic strata; a fact which, though suspected, had not hitherto been demonstrated, and which is one of the keys to the geology of North-eastern America. Mr. Logan found the rocks which form the Laurentian mountains,—previously regarded as unstratified,—to be disturbed and altered sedimentary deposits of vast thickness, equal possibly to all the hitherto known stratified rocks of the earth's crust. These Laurentian rocks are unconformably underlying Potsdam sandstone, which lies at the base of the Lower Silurian rocks. The same rocks have since been recognized by Sir Roderick Murchison, as forming, the so-called, fundamental gneiss of the Western Islands of Scotland and parts of Ross-shire and Sutherlandshire. In 1851 Mr. Logan represented Canada in the Great Exhibition. The remarkable display then made by that interesting colony will not be readily forgotten, and in the 'Illustrated Catalogue' will be found some valuable annotations by Mr. Logan, on the mineral productions

of Canada. In 1855 Mr. Logan was a Commissioner from Canada at the Industrial Exhibition at Paris, when he received the Grand Gold Medal of Honour, and from the Emperor the decoration of the Legion of Honour. In 1851 Mr. Logan communicated to the Geological Society of London a paper "On the occurrence of a Track and Footprints of an Animal in the Potsdam Sandstone of Lower Canada." These were carefully examined by Professor Owen, who has determined them to belong to some species of crustacean, and have given to them the name of *Protechinitis*. In this year Mr. Logan was elected Fellow of the Royal Society, and in 1856 he was knighted,—receiving in the same year from the Geological Society, of which he had long been a member, the Wollaston Palladium Medal for his eminent services in geology. In 1862 Sir William Logan again had charge of the Canadian products in the International Exhibition, and was one of the jurors for the class devoted to mineral and metallurgical products. Recently the Canadian Government has published a Report of the progress of the Geological Survey, from its commencement to 1863, which is due to Sir William Logan, and the staff of assistants whom he has trained. This work represents the value of the labours of this eminent geologist, both in a scientific and a commercial point of view, while it displays the vast natural resources of that great country. The latest work of Sir William Logan must be regarded as his greatest. To determine the superposition of such an ancient series of rocks as the Laurentian, is a task which has never been accomplished in geology. The attempt has been made by Sir William Logan to work out the structure of a portion of the Laurentian country, and he has been singularly successful in his labours. He has proved the Laurentian rocks to be of two series,—lower and upper,—both highly crystalline, the lower consisting chiefly of orthoclase gneiss, and the upper, instead of orthoclase, containing a great deal of labradorite, both of them holding bands of serpentine and crystalline limestone. In the limestone of the Lower Laurentian limestone, Sir William Logan has found organic remains—the *Eozoon Canadense*, determined by Dr. Dawson, of Montreal, and by Dr. Carpenter, to be one of the Foraminifera, a fossil from a zone prodigiously older than any previously known, for it is in the oldest known formation in the world. This example of ancient life has formed the subject of a communication to the Geological Society of London, and of a lecture, which has been recently delivered at the Royal Institution, by Professor Ramsay.

The volume of embodied reports to which we have already alluded exhibits the industry and ability of the indefatigable Director of the Survey of Canada, Sir William Logan. The style in which the work has been got up, the precision of the drawings and the accuracy of the woodcuts, are alike creditable to all concerned. Sir William Logan is now in this country, engaged in the production of a series of geological maps of the colony. The correctness with which these have been executed, and the minuteness of the geological detail contained in the original survey, from which Sir William Logan has constructed those for publication, may challenge comparison with the finest works of the same class in this or in any other country.



LORD LYTTTELTON.

GEORGE WILLIAM LYTTTELTON, fourth Lord Lyttelton, Baron Frankley in the Peerage of Great Britain, Baron Westcote in the Peerage of Ireland, a Baronet, Lord Lieutenant of Worcester, and High Steward of Bewdley, F.R.S., LL.D., is the son of William Henry, third Lord Lyttelton, by the Lady Sarah Spencer (eldest daughter of George John, second Lord Spencer), who, as the Dowager Lady Lyttelton, will be remembered as having held the important office of Governess to the Royal children. He was born 31st of March, 1817. After having greatly distinguished himself at Eton, Lord Lyttelton proceeded to Trinity College, Cambridge, where he graduated in the highest classical honours, bearing off the Chancellor's Medal in 1838.

On the 25th of July, in the following year, Lord Lyttelton married Mary, the second daughter of the late Sir Stephen Glynne, Bart., of Hawarden, whose sister Catherine was married the same year to Mr. Gladstone, M.P., now (1865) the Member for the University of Oxford, and the Chancellor of the Exchequer. Such a connection between two men of habits of thought and acquirements so similar, could scarcely fail to be congenial on both sides, and we accordingly find it gracefully recorded in a few simple lines—

“ Ex voto communi
In Memoriam
Duplicum Nuptiarum.
VIII Kal. Aug. MDCCCXXXIX.”

prefixed to a volume of Poems, chiefly translations of classic English authors, into Greek and Latin, published jointly by Lord Lyttelton and Mr. Gladstone in 1861. A touching interest is given to this record by the bereavement sustained by Lord Lyttelton in the loss of his wife on the 17th of August, 1857.

By this lady Lord Lyttelton has a large family. One of the daughters, the Honourable Lucy Caroline (married in 1864 to Lord Frederick Cavendish, second son of the Duke of Devonshire), was for some time Maid of Honour to the Queen; and for one of his sons, the Honourable Albert Victor, born in 1844, her Majesty herself stood sponsor.

In the year 1846, Lord Lyttelton accepted office as Under Secretary of State for the Colonies, which he held for a short time only, though long enough, it would seem, to have acquired that interest in and practical acquaintance with colonial affairs, which has enabled him out of office to render such signal services to our colonial system in the various questions, especially that of Emigration, which have engaged the attention of Parliament and the public in reference to it since that time. Notwithstanding the inducements which his personal connections and experience might seem to have afforded, Lord Lyttelton has shown no desire to embarrass himself further with the cares and profits of political office.

A field of less obtrusive public usefulness for men of leisure and capacity has however been growing up amongst us of late years, to an extent which we are only beginning to appreciate, through the medium of the various voluntary associations which have arisen for the promotion of objects of social and benevolent science. Involving in those actively engaged in their direction all the qualities of administrative capacity, tact, and industry, which are in demand in the public administration of the affairs of the country, this sphere of labour may perhaps be regarded in some sort as its *social* and *moral* administration, and is indeed solely or mainly distinguishable from its prototype, by being unprovided with the attributes of pay and patronage. In this field of work, which, if it be indeed better to give than to receive, is not the least honourable of the two, Lord Lyttelton has found abundant and congenial occupation; and in it his services, more especially in the cause of Emigration and Education (which in fact lie at the root of all the most important of the social problems we are now seeking to solve), have been unsparingly rendered.

In the year 1847 an attempt was made, through the medium of the Canterbury Association, of which Lord Lyttelton was the Chairman, to found a settlement of Colonists in New Zealand, based avowedly on religious principles, as represented by the

Church of England. This experiment proved highly successful ; and the prosperity of the Settlement of Canterbury, with its harbour town of Lyttelton, named after its noble promoter, will, it is to be hoped, long bear witness to the value, for the purposes of Colonization, of a congenial moral and social organization.

In January 1863, two societies which had previously existed for promoting emigration to the Colonies, were consolidated into the National Colonial Emigration Society, and of this Association Lord Lyttelton accepted the Presidency. The object of this Society is to assist, with the co-operation which it has received from the authorities of the Colonies and the contributions of benevolently disposed persons at home, the emigration of suitable Colonists, by affording information, grants of money in certain cases, and other needful help. The amount of present and prospective blessing which in a modest office on the second floor of a house in Charing Cross, this unostentatious Association has done and is doing, is not easy to be estimated.

In connection with Lord Lyttelton's labours in the cause of the Colonies, reference should not be overlooked to his speech in the House of Lords on the third reading of the Australian Colonies Government Bill in the year 1850,—containing, as it does, a wise and statesmanlike exposition of the principles which should regulate the consideration of the subject, both from the Liberal and Conservative points of view.

In the cause of education Lord Lyttelton's labours have been active and unremitting. Mindful of the obligations imposed upon us of not neglecting the work which lies at our hands, Lord Lyttelton's attention has been especially directed to the promotion of education in his own County, to the welfare of which, as its Lord Lieutenant, and in that capacity the personal representative of the Sovereign, he has doubtless felt peculiar inducements to devote himself. By means of the Worcester Diocesan Training College, which he founded, Lord Lyttelton has secured for his County the means of obtaining a supply of skilled teachers in its schools ; and by his own example—for he has not disdained to fulfil himself the simple duties of a Sunday School teacher in his own parish—he has

“ Allured to *wiser* worlds and led the way.”

As an active member of the Commission for inquiring into the

constitution and practice of the great public schools of this country, as also of the Commission appointed for a similar investigation into the schools more generally frequented by the great mass of the middle classes, Lord Lyttelton's public services are well known.

In these inquiries, his sympathies with the institutions, the association with which assisted the moulding of his own mind, and in which some of, it may be not the least valued of its triumphs, were gained, have been leavened with that practical philosophical perception of the requirements of the present and future, which is, after all, the true end of all education, and which has at all times characterized Lord Lyttelton's public and political utterances.

On the establishment of the Working Men's Club and Institute Union—a Society for promoting the moral, social, and intellectual development of the working classes through the medium of associations of their own—Lord Lyttelton became one of its Vice-Presidents, and from his strong and active personal interest in it, more especially during the absence from England of its President, Lord Brougham, he may fairly be regarded as its Vice-President *par excellence*.

In all Lord Lyttelton's various labours, we find evidence of the strong conviction animating them, on his part, of the necessity for a moral and religious basis in all operations and organizations, for whatever purpose established,—a conviction which, if more generally entertained by the active promoters of intellectual progress, and what is termed civilization, might sometimes save them from disappointment at the too frequently insufficient results of their otherwise well-considered enterprises.

Lord Lyttelton is an earnest lover of the national Church, and a steady supporter of its essential rights and privileges. This support is the more valuable, because associated with an unqualified recognition of the errors into which those of us must fall who are not careful to satisfy themselves that the spirit they reverence remains in the form in which they have been accustomed to look for it; and of the necessity to which all human institutions, whatever their origin, are subject, of gradual modification and reform.

Lord Lyttelton has recently published, under the modest title of 'Ephemera,' a volume of essays upon subjects as little ephemer-

meral as could well be conceived. We call to mind no work better calculated to afford to some future Macaulay an idea of the habits of mind and occupations of a Christian gentleman of rank, of the nineteenth century, than this unpretending little volume. Now, we have a letter of a landlord to his tenantry on some matter affecting their mutual interests, now a speech in Parliament on some question involving the interests of us all ; here the improvement of an occasion by an address to a domestic household, there, an essay on some important principle affecting the faith or the discipline of the Church at large ; a lecture to a local club, or an Essay on Poetry or general reading,—all relieved from any ephemeral character, which may have seemed to attach to the occasions in which they originated, by principles, belonging to all time, always earnestly sought, to be deduced from them. We think that in lieu of the modest "*cheu fugaces*," selected for the epigraph to this volume, the words "My Father worketh and I work" might, without irreverence, have been assumed as the motto of its writer, as they have, we believe, been a guiding principle of his life.



GENERAL SIR JOHN FOX BURGOYNE, BART.,**G.C.B, D.C.L., F.R.S., INSPECTOR-GENERAL OF FORTIFICATIONS.**

FEW men have been, during a long life, more actively employed than this veteran officer, who has taken a prominent position in nearly all the important events in which our Army has been engaged since the commencement of the present century.

The subject of this biographical notice is the son of the Right Hon. John Burgoyne, M.P. He was born in London, on the 24th of July, 1782. In 1798 he commenced those military duties to which Sir John Burgoyne has unremittingly devoted himself for upwards of sixty years. The young soldier was educated at Eton and at the Royal Military Academy. After passing through the ordinary courses of instruction, which are required from our young engineer officers, we find Lieutenant Burgoyne actively employed in the Mediterranean, from the year 1800 to 1807. His earliest experience in actual warfare was gained when General Pigot blockaded Valetta, and eventually forced the French troops, who held possession of Malta, to surrender as prisoners of war. The course of circumstances, as is well known, compelled the English to hold possession of an island of which they at first had but temporary possession; and Malta, during the turbulent period which ensued, became the head-quarters of the English army in the Mediterranean, and the rendezvous of the British fleet. Lieutenant Burgoyne served with our Army in Sicily; he was present at the capture of Alexandria in 1801, and took an active part in all the duties of an engineer officer in the attack on Rosetta. We find him transferred from the South of Europe to the North, in 1808, when he was sent with the auxiliary force of 11,000 English soldiers, under Sir John Moore, to the assistance of Sweden.

Through the incapacity of the King of Sweden, this force was shortly dismissed, and the greater portion of these soldiers, under the same command, were landed in Portugal, for the purpose of restoring its independence; Portugal being held by Junot, for the French, as a conquered country. Now commenced that glorious career with which the name of Wellington is for ever associated. In 1809 Burgoyne was sent to join the Army in the Peninsula, under the command of Sir Arthur Wellesley, who was created Viscount Wellington in 1810. From that time until the conclusion of the memorable campaign, Burgoyne remained with it, and was ever actively engaged. He was attached to the third division, which, it will be remembered, especially distinguished itself, and took part in most of the general actions. This still young engineer officer was present at most of the sieges, and those of Burgos and San Sebastian he conducted. Early during the siege of San Sebastian, the superior officer, who was conducting the operations, was killed in the trenches, upon which Burgoyne assumed the responsible command, and conducted the siege to its conclusion. His valorous achievements were acknowledged, and Burgoyne received the gold cross and clasps for Badajos, Salamanca, Vittoria, San Sebastian, and Nive, and the silver medal and clasps for Busaco, Ciudad Rodrigo, and Novelle. During this campaign Colonel Burgoyne received two wounds. In 1814, the Peninsular war having been brought to a close by the final defeat of Soult by Wellington, Burgoyne was appointed Commanding Engineer of the expedition to New Orleans; he was present at the attack on the town, and at the taking of Fort Bowyer. Returning to England, he appears to have enjoyed a short period of repose, and in 1820, being then thirty-eight years old, Burgoyne married Charlotte, the daughter of Hugh Rose, Esq., of Holme, county Nairn, Scotland, by which lady he has had one son and six daughters. In 1826 Portugal appealed to England for assistance, when Spain was disposed, by armed interference, to support a party in Portugal which aimed to overthrow the Constitution granted by Don Pedro. England then sent out troops, and Colonel Burgoyne accompanied the Expedition as commanding officer of the Engineers.

In 1830 Colonel Burgoyne was appointed Chairman of the Irish Board of Public Works. Upon attaining his rank of Major-General in 1837, he was made Knight Commander of the Bath,

and in 1845 he was selected as Inspector-General of Fortifications. The famine was making itself most disastrously felt in Ireland in 1847, and to Sir John Burgoyne was entrusted the delicate task of conducting the commission for the relief of Irish distress. About this period the well-remembered Memoir, exposing the defenceless state of the British Isles, was published by Sir J. F. Burgoyne. To this the Duke of Wellington replied in a letter which was published in all the journals, and produced an extraordinary sensation. The naval and military services had been reduced, by a process of dangerous retrenchment, until they were, in the event of a war, nearly ineffective; but the memoir and the letter enabled the Executive to overcome the miserable policy which led to this condition of things; a new militia was raised, and the Inspector-General of Fortifications was empowered to carry out the works now acknowledged to be necessary around our shores. In 1851 Sir John Burgoyne was nominated to a post as a Commissioner of Sewers, to regulate the construction of an important system of Metropolitan drainage works. In this year Sir John Burgoyne was breveted a Lieutenant-General, and in 1852 he received the Grand Cross of the Order of the Bath. In 1854 the condition of Turkey, and the threatening aspect of Russia, rendered it necessary that England should secure the free passage of the Dardanelles, the Sea of Marmora, and the Bosphorus, and also arrange effectively the defences of Constantinople. For this purpose Major-General Burgoyne was sent to the East, where however he did not remain long. He returned to England, only, however, to retrace his steps; to him was committed the charge of directing the English works intended for the reduction of Sebastopol, and he commenced the first works of circumvallation. Sir John Burgoyne was at the battles of the Alma, Balaklava, and Inkerman. In consideration of his long and active service, and of his advanced age, in 1855, he being now seventy-three, Major-General Sir J. F. Burgoyne was recalled, and replaced by General Sir Harry D. Jones. Sir John Burgoyne remained, however, with the Army for three months, at the express wish of Lord Raglan, whom he greatly aided by his counsel, in the difficult position in which the Commander of our Forces was then placed. On his departure from the Camp he received the thanks of Lord Raglan in a General Order. In this year Sir J. Burgoyne officiated as Vice-President of the Military Section of the Paris Universal

Exhibition of 1855, and again in London in the International Exhibition of 1862.

In 1856 Sir John Burgoyne was created a Baronet of the United Kingdom, promoted to the rank of General, and in the same year he became a Fellow of the Royal Society. Beyond these honours, the veteran warrior was elected Grand Officer of the Legion of Honour, K.C.I.S., and First Class of the Medjidie of Turkey. In 1858 Sir J. Burgoyne was selected by the English Government to present to the French Emperor the funeral car which conveyed the first Napoleon to his grave at St. Helena. The presentation took place with great ceremony at the Hôtel des Invalides at Paris.

Sir John Burgoyne has used his pen, with power only inferior to that with which he has wielded his sword, and many excellent papers, written by him, are to be found in the current literature of the day. In 1865, on the death of Field Marshal Viscount Combermere, he was appointed Constable of the Tower of London, and Lord Lieutenant of the Tower Hamlets. Arrived at an advanced age, General Sir John Burgoyne must enjoy the high satisfaction of looking back upon a life well spent in the honourable service of a grateful country. May he still continue, with the blessing of health, to feel that happiness for many years.



SIR JAMES CLARK, BART., M.D., F.R.S., ETC.

PHYSICIAN IN ORDINARY TO THE QUEEN.

THE distinguished Physician, whose portrait this notice is intended to accompany, was born in December, 1788, at Cullen, in Banffshire. His rudimentary education was received in the grammar-school of Fordyce, and his more advanced education in King's College, Aberdeen. From this university, James Clark, some long time after he had left it, received his M.A. degree. Medicine was studied by Mr. Clark in Edinburgh, and he passed his examination in the College of Surgeons of that city, and of London. He entered the Navy as an Assistant-Surgeon, and remained afloat until 1815, when he returned to Edinburgh, resumed his studies, and in 1817 took his M.D. degree. Dr. Clark devoted some time to travelling, and eventually settled as a physician at Rome, where he practised for eight years. During his residence in Italy, with an earnest desire to become acquainted with all the modes adopted by the medical men of the Continent in the treatment of diseases, he visited the medical schools and universities of Italy, France, and Germany; and thus by adding to his knowledge, secured for himself that position in the medical world of England, which Sir James Clark has so long enjoyed. Dr. Clark visited the most celebrated of the mineral springs of the Continent, and made himself thoroughly acquainted with their chemical constitution, while he carefully studied their influences on disease. At this time Dr. Clark had the opportunity of observing the effects of climate on several forms of disease, more especially diseases connected with the respiratory organs, and to the experience gained at this time must be referred the celebrity which

he so long enjoyed, for his treatment of consumption in its varied forms. Dr. Clark, during his residence at Rome, met Prince Leopold of Saxe-Coburg. The acquaintance was renewed at Carlsbad, and subsequently it led, soon after the Prince had settled in England, to his being appointed his physician. Two years after his return to London, Dr. Clark was appointed Physician to St. George's Parochial Infirmary. In 1828 he published, as the result of his previous carefully-conducted studies, a work 'On the Sanative Influence of Climate.' A fourth edition of this work, which was published in 1856, sufficiently shows the estimation in which it has been held. In connection with this subject, Dr. Clark drew attention to the importance of securing correct meteorological tables, and we may ascribe much of the attention which is now given to this subject, to the influence of his remarks. In 1832 Dr. Clark was elected a Fellow of the Royal Society, and he has several times been chosen as a member of the Council of that most time-honoured and, in every way, honourable institution. On the death of Dr. Maton, Dr. Clark was appointed Physician to H.R.H. the Duchess of Kent, and Princess Victoria. Upon the accession of the Princess to the throne, he received the appointment of First Physician in Ordinary to the Queen. In 1835 Dr. Clark published 'A Treatise on Pulmonary Consumption and Scrofulous Diseases;' and certainly he was the first to prove that those melancholy diseases were due to a deterioration of the system, and a weakening of the powers of vitality; hence the development of those forms of disease, which so frequently, and always so sadly, destroy the fairest flowers of humanity.

On the establishment of the University of London, Dr. Clark was chosen on the Senate, and he then produced his pamphlet, 'On Clinical Instruction.' The defects in our medical education, which were then pointed out, have since been remedied in this country, more especially since the University of London made the examination at the bedside an essential part of the examination of candidates for degrees in medicine and surgery. In 1838 Dr. Clark was created a Baronet of the United Kingdom.

Sir James Clark has ever been a most zealous advocate for those measures of sanitary reform, which are now being carried out; and it must be a great satisfaction to him, in his age, to see those hygienic measures which he has repeatedly supported, demanding the attention of our Legislature, and in nearly all cities

and large towns, put into active operation. Sir James Clark contributed a valuable paper to the Cyclopædia of Practical Medicine, 'On Change of Air,' and he is the author of numerous other papers, which have, from time to time, appeared in the journals devoted to medical science. Sir James Clark has never failed to promote the interests of science: to him belongs the establishment of the College of Chemistry, which was so very warmly supported by the late Prince Consort, and which has now become the property of the Royal School of Mines,—Dr. Hofmann, its first professor, remaining the teacher until most recently, with one of the best chemical classes in the country. At a dinner given to Dr. Hofmann, by the Students of the College, on his leaving for Germany, the services of Sir James Clark were fully acknowledged. Sir James Clark, finding his health failing, retired from practice some years ago. He has, since his retirement from the toil of Metropolitan practice, resided in Bagshot Park House, which was given to him by the Queen as a residence. Although he has withdrawn from general practice, Sir James Clark still attends the Royal Family, in conjunction with the other medical attendants, but chiefly, we believe, as consulting physician. We have reason to know that he still takes a warm interest in everything connected with the improvement of our medical schools, and the progress of all hygienic measures; and that the advancement of scientific knowledge is watched as anxiously as ever by Sir James Clark.



THE REV. JOHN GEORGE WOOD, M.A., F.I.S.

AMONGST the invaluable intellectual workers of the present day, assuredly rank those writers who labour to popularize the study of science;—who in this age of over-wrought mental life, with its disease-engendering sedentary occupations, induce—especially in childhood and youth—tastes and habits which lead men and women as well as children into the fresh air and the country for their relaxation, rendering every hedgerow, pond, and meadow, a health-giving school of recreative knowledge, or who through graphic description, engravings, and the revelations of the microscope, bring an unlimited area of beneficial amusement and instruction within the narrow and solitary chamber of the invalid, or within the parlour of the compulsory inhabitant of our great cities, yearning for the refreshment of visions of God-created beauty and marvellousness.

One of the most successful of these labourers in the sphere of natural history is the subject of our present biographical sketch.

The Rev. J. G. Wood was born in London, in July, 1827; his father, a surgeon, being at that time chemical lecturer at Middlesex Hospital. In 1828 the subject of our memoir removed with his parents to Oxford. He was educated at the grammar school of Ashbourne, Derbyshire, and at Merton College, which he entered in 1844. He was elected Jackson Scholar in 1845; graduated B.A. in 1848, and M.A. in 1851.

Mr. Wood's love of natural history dates back to his earliest years, when with a pill-box in one hand and a magnifying glass in the other,—the one for purposes of capture, the other for examination,—he was wont in early childhood, hour after hour, to prow about his father's garden. This must have been a very "garden of choice delights" to the nine children of the family, being evi-

dently regarded by their parents as a playground rather than as a fruit and flower preserve. There was a very old stone wall in this garden, full of nooks and crannies, a famous haunt for insects, furnishing an inexhaustible mine of entomological knowledge. The father of the family used to marvel why his fruit-trees upon this wall never prospered. His son John could have explained the mystery, the branches forming ladders wherewith to ascend the old insect-haunted wall,—ladders whereby the young naturalist ascended into “the tree of knowledge.” A microscope also became a source of intense enjoyment to our child-naturalist; everything, picked up by his little, agile fingers was passed beneath its magical lens, until at length this microscope fell to pieces from over-use and experiments upon its improvement. Pets of heterogeneous nature—dogs, cats, rabbits, owls, hawks, canaries, snakes, toads, tamed mice, beetles, spiders, etc. etc.—called forth his early sympathies, and their dispositions and habits were studied with keen observation.

Whilst at Ashbourne, our ardent young naturalist revelled in holidays and half-holidays passed amidst the beautiful surrounding scenery of the Peak, where, together with favourite companions, he indulged in the lawless fascination of birds'-nesting and poaching, distinguishing himself as the envied possessor of the greatest number of eggs and as the vaunted maker of the best snares. This love of wantonly capturing animals and their produce—a boyish tendency severely reprehended by Mr. Wood in his character of author—appears at this period to have outweighed his love of innocuous research into their lives and domiciles. Probably, to paraphrase a poet's thought, boys frequently “learn in *ignorance* what they teach *when wise* ;” and the suffering thus ignorantly and thoughtlessly inflicted at this period by the boy-naturalist may, remembered by the man, have inspired the humane wisdom with which Mr. Wood has enriched his pages.

Each branch of natural history possesses a charm for our ardent naturalist, nevertheless his writings invariably prove that their author's interests centre rather in the living than in the dead forms of creation. In the Rev. J. G. Wood's justly popular little book, ‘Common Objects of the Country,’ he observes:—“The true naturalist never destroys life without good cause, and when he does so it is with reluctance and in the most merciful way; for the life is really the nature, and that gone, the chief interest of the crea-

ture is gone too. We should form but a poor notion of the human being were we only to see it presented to our eyes in the mummy; and equally insufficient is the idea that can be formed of an animal from the inspection of its outward frame. Nature and life belong to each other; if torn asunder, the one is objectless, the other has vanished."

In 1852, Mr. Wood was ordained Chaplain of the Boatman's Floating Chapel at Oxford. In 1856 he was appointed Assistant Chaplain to St. Bartholomew's Hospital, London, and Reader to Christchurch, Newgate Street. Whilst domiciled in the heart of the City, Mr. Wood contrived to pursue his favourite studies, and his rooms were rendered lively and interesting by the presence of a crowd of his "feathered friends." About this time commenced Mr. Wood's career as a successful author.

His appointments as Chaplain to St. Bartholomew's Hospital and Reader at Christchurch were held by him six years, when his health giving way, through the necessitated close confinement in the heart of the metropolis, he was forced to resign them, and removed into Kent, where he has devoted himself assiduously to his literary and scientific pursuits.

Mr. Wood married, in 1857, Jane Eleanor, third daughter of the late J. Ellis, Esq., of Denbigh Street, Pimlico.

The cheap works already published by this indefatigable popularizer of science are:—'A Popular Natural History,' 'Sketches and Anecdotes of Animal Life,' 'The Boy's Own Natural History Book,' 'My Feathered Friends, or Bird Life,' three little handbooks of a novel character, entitled 'Common Objects of the Country,' 'Common Objects of the Seashore,' and 'Common Objects of the Microscope,' 'Glimpses into Pet-land,' 'Garden Friends and Foes,' and, lastly, Mr. Wood's most important work, both as to scope and size, 'The Illustrated Natural History' (3 vols. imp. 8vo), published by Routledge, Warne, and Routledge (originally appearing in monthly parts), a work unique of its kind, both on account of the amount of interesting anecdote and scientific information presented to the reader in an unpedantic manner, as well as through the beauty and profusion of its illustrations from the pencils of Wolf, Zwicker, Harrison Weir, etc.

At the present time (1865) another illustrated work from the pen of the Rev. J. G. Wood is in course of publication in numbers. It is entitled 'Homes without Hands,' and is published by

the Messrs. Longman. A vast array of facts relating to the marvellous instincts of the animal creation is thus grouped around one central idea, the habitation wrought for the creature by itself. The classification of these 'Homes without Hands' is made to depend upon the situation chosen for its abode by the bird, beast, insect, or reptile architect.

The fascination of Mr. Wood's writing is the result of the remarkable power which he possesses of, so to speak, identifying himself with the nature of the beautiful, wonderful, and quaint creatures whose lives and homes he depicts; through the might of his own sympathy he draws forth the sympathy of his reader, and thus it may be granted that in no small degree he has accomplished the aspiration thus expressed by him in one of his prefaces:—

“I have endeavoured to demonstrate the mental and sympathetic connection which, though so little appreciated, exists universally between man and beast, and which is in part the link that unites through mankind the spiritual to the material world. Sympathy unites all; animals of different classes and different habits are drawn together by this potent, though gentle bond, and when sympathy is extended to them by man, they all blend together and unite in his more comprehensive nature.”

The Rev. J. G. Wood has lately become editor of Beeton's 'Boy's Own Magazine,' to which he had for some years been a constant contributor, and will henceforth probably within its pages find scope for one great object of his writings, namely, the ceaseless endeavour to keep the laws of love, truth, and honour, ever before the eyes of the youth of this generation, and thus regarding them as the parents of the next, through them and through their higher aspirations and nobler deeds in turn acting upon the future, leave the world a little better than he has found it. Mr. Wood has himself observed with reference to the object of his work in literature:—“My aim has ever been directed towards the future, and towards that mark alone my shafts have been directed, the light and 'popular' style being merely the feathering to send the arrows straight to their mark. I am thankful to believe that so few have gone astray. But their flight is long, and possibly they may hit the gold after all.”



COMMANDER BEDFORD PIM, R.N.,

F.R.G.S., ASSOC. INST. C.E.

COMMANDER BEDFORD PIM was born on the 12th of June, 1826. His father was a distinguished naval officer, who died in command on the coast of Africa whilst employed in the suppression of the slave trade.

The subject of our memoir early evinced a passion for travel and research, and commenced his career by a voyage to India in the merchant service.

In 1842 he entered the Royal Navy as first-class volunteer, and was for some time employed in surveying duties.

In 1845 the frigate 'Herald' was detailed for a scientific voyage round the world, and Mr. Pim was appointed to her. The service on which he was engaged supplied him with many opportunities for distinguishing himself, and in 1846 we find him in command of the 'Owen,' one of the tenders to H.M.S. Herald, and employed in extensive surveys on the Pacific side of the Isthmus of Central America.

In the following year Mr. Pim and Mr. Seemann, the naturalist, performed a journey across the Cordillera of the Andes, with a view of taking astronomical observations and collecting objects of natural history,—an expedition which proved of great scientific interest and importance.*

About this time the people of England began to feel uneasy respecting the fate of Sir John Franklin, who left England in 1845 on a voyage of discovery to the Polar regions; and among other measures, orders were transmitted to the commanding officer

* See Voyage of H.M.S. Herald: Messrs. Lovell Reeve and Co.

of H.M.S. Herald to sail up Behring's Straits, and ascertain if any traces could be found of the missing ships.

In Behring's Straits Mr. Pim volunteered to remain during the winter of 1848-49 on board H.M.S. Plover, and took advantage of the opportunity to make himself acquainted with the language and habits of the Esquimaux. He remained amongst them many months, and, ever keeping in mind the service in which he was engaged, was delighted to learn from them that guns of a different manufacture from those ordinarily supplied by the Russians had been seen in the hands of the Indians of the interior.

To test the truth of this information Mr. Pim obtained leave to attempt a searching journey, and, starting at an unprecedentedly early period, the 10th of March, accompanied only by an Indian, half caste, and scantily supplied with provisions and arms, he commenced his perilous expedition. For many days the adventurous traveller struggled over the frozen solitudes, being at one time three days with scarcely a morsel of food.

The strength of the Indian at length gave way under the terrible privations, and Mr. Pim was compelled to push on alone, by great exertion obtaining assistance and rescuing the Indian.

He also ascertained that the guns in question were not of Russian manufacture, but whence they came, or how obtained, is to this day a mystery.

On the return of H.M.S. Herald to England in 1851, after an absence of six and a half years, Mr. Pim found he had been promoted the previous year to the rank of lieutenant; at the college examination necessary for confirmation to that rank he passed at the head of upwards of thirty candidates, and was complimented by the admiral for his superior attainments, which would alone have secured his promotion.

Lieutenant Pim having carefully studied the Arctic question, entertained the opinion, now shared by many geographers, that there was an open sea round the North Pole, and that it was but justice to Sir John Franklin to look for him at the end rather than at the commencement of his voyage; he therefore proposed a careful search of the whole of the Northern Coast of Asia.

So great was the enthusiasm excited by this daring proposition, that when Lieutenant Pim went to St. Petersburg to lay his plans before the Czar, Earl Russell, then Prime Minister, afforded material aid, and Lord Palmerston sent with him a special Foreign

Office messenger. His Imperial Majesty, however, refused to grant the necessary permission to proceed, remarking to Lieutenant Pim that the risk and difficulties were such as no human being could overcome.

The only consolation Lieutenant Pim experienced under this bitter disappointment was the warm sympathy and friendship of Baron von Humboldt, who ever afterwards addressed him as his "very dear and brave young friend." Returning from St. Petersburg, Lieutenant Pim reached England in time to join the last Arctic Expedition, sent out by Government under the command of Sir E. Belcher; he was attached to H.M.S. Resolute, and sailed from the Orkneys, May, 1852.

Early in March, 1853, the thermometer, at 57° below zero, he made a journey across the ice, employing dogs for the first time in Eastern search to draw one of his sledges. After twenty-eight days of severe toil, the journey resulted in the rescue of the crew of H.M.S. Investigator, which had been frozen in upwards of three years, and was on the point of being abandoned. To use the words of Sir R. Murchison, President of the Royal Geographical Society, "Lieutenant Bedford Pim rescued that gallant explorer, Captain M'Clure, from *destruction*, enabling him, in fact, to complete the journey, which entitled him to the rewards of his Sovereign and from Parliament for completing the North-West Passage." And the learned Hydrographer to the Admiralty, Admiral Sir Francis Beaufort, in addressing Lieutenant Pim, writes: "I am free to say that the practical knowledge you obtained during the several years (nine) you remained in the surveying service, joined to the double *éclat* you acquired by the embassy to Russia, and by your having been the fortunate link of connexion between the Eastern and Western Arctic Expeditions, will for ever stamp your name as the possessor of resources and of enterprise which cannot fail to carry you safely and speedily through all the uphill part of the profession." Finally, a Parliamentary Committee, appointed to inquire into the circumstances connected with the discovery of the North-West Passage, showed their appreciation of his conduct in the following terms:—

"We, the undersigned members of the Select Committee appointed to inquire into the circumstances of the Expedition to the Arctic Seas, commanded by Captain M'Clure, R.N., have had our attention drawn to the gallantry, perseverance, and judgment of

Lieutenant Bedford Pim, R.N., as displayed in the rescue of Captain M'Clure and the officers and crew of H.M.S. Investigator.

“The instructions from the House of Commons did not allow of our including any name but that of Captain M'Clure in our report to the House, but Lieutenant Bedford Pim's conduct in the discovery of the ‘Investigator’ did not escape our notice, and we consider he is not only deserving of praise but of high reward.”

Lieutenant Pim's next appointment was to H.M. gunboat *Magpie*, and in her he did good service at the bombardment of Sweaborg and other minor affairs in the Baltic, where he received a wound in the leg from a splinter.

At the breaking out of hostilities with China, 1857, he was given command of H.M. gunboat *Banterer*, and took his frail vessel from England to the Canton River. A proclamation had been issued that the English did not intend to wage war against the people of China, but simply against the Mandarins, and immediately after Lieutenant Pim's arrival a Mandarin of high rank visited the town of Seelow, situated a few miles inland from the ‘*Banterer's*’ station on the Canton River, and began, what is called in China, to squeeze the inhabitants. The oppressed people appealed to him to take the Mandarin; and he determined, with a volunteer crew of fifteen men in all, to attempt his capture. The Government buildings in the centre of the town were soon reached, and as quickly searched, but no Mandarin found, and the treacherous townspeople surrounded the party, aided by about one thousand braves. Hemmed in on all sides by overwhelming numbers, the little band had literally to cut a road to the boat, which was reached after a most severe hand-to-hand fight; the Chinese then attempted to board, but Lieutenant Pim, who remained alone in it to cover the retreat of his few surviving followers, shot the leader of the boarding party, who was in the act of cutting him down, and whilst the Chinese fell back with his dead body, the boat, riddled with shot and encumbered with dead, went to the bottom; Lieutenant Pim, covered with wounds, succeeded in reaching the opposite side of the creek, and was rescued by the boats of H.M.S. *Nankin*.

In this severe struggle only three escaped without serious injuries, the loss amounting to five killed and seven dangerously wounded, Lieutenant Pim himself receiving no less than six gunshot wounds of so severe a nature as to compel his being invalided home.

On leaving the station, the Admiral-Commander-in-Chief, Sir Michael Seymour, wrote to express his high sense of Lieutenant Pim's gallantry and firmness on this occasion.

On the 19th of April, 1858, Lieutenant Pim was advanced to the rank of Commander, and as soon as his health was sufficiently re-established to enable him to move, he accompanied his friend the late Robert Stephenson, M.P., on a voyage to Egypt. After visiting the Isthmus of Suez, Commander Pim returned to England early in 1859, and his paper on the Suez Canal, read before the Royal Geographical Society, has long been considered one of the most valuable ever published on that subject.

At this time the Board of Admiralty—knowing how to put the right man in the right place—appointed Commander Pim to the command of H.M.S. Gorgon, and dispatched that vessel to the river Tyne, with a view of popularizing the navy and encouraging the entry of seamen. So admirably was this duty performed, that to his exertions may be mainly attributed the subsequent steady growth of the naval reserve in the north of England. His next service was the settling a delicate question with our French neighbours respecting the fisheries; this satisfactorily concluded, the 'Gorgon' was dispatched to the West Indies and employed on the coast of Central America for the prevention of any further filibustering attempts against Nicaragua on the part of General Walker. The 'Gorgon,' however, being in a very dilapidated condition, was ordered home in April, 1860. Commander Pim's career in this ship is soon told; he was sent to search for and aid the line-of-battle ship 'Hero,' with the Prince of Wales on board, then on the return voyage from America; and in November, 1860, sailed in the 'Gorgon' for the Cape of Good Hope and coast of Africa station, but in the June following, having exchanged into and brought home H.M.S. Fury, he paid that ship off at Portsmouth, and has since continued on half-pay, although perhaps more actively and usefully employed than at any former period of his life.

During his term of service in H.M.S. Gorgon on the coast of Central America, Commander Pim was very seriously impressed with the unsatisfactory condition of English interests in that part of the world (especially as regards the means of transit across the isthmus), and therefore brought his practical knowledge to bear on the subject.

We have stated that to his exertions the country is chiefly indebted for solving the question of the North-west Passage. He was also connected with the transit across Suez, and, singularly enough, was the first to enter the town by train on the completion of the railway to the Red Sea, while his writings are an authority on the subject; and as regards Central America, his actual surveys in early life on the Pacific coast, and his practical experience in command of H.M.S. Gorgon on the Atlantic side, render him beyond dispute the greatest living authority on transit matters.

Commander Pim found every vestige of interest in interoceanic transit monopolized by the Panama railway, in the hands of Americans, the Nicaraguan transit in virtually the same condition, and the routes across Honduras and Tejuantepec secured for the United States,—while to crown all, the Monroe doctrine was tending to shut out European enterprise; but so thoroughly convinced was he that a little wholesome transit competition on the isthmus of Central America was required, that, with characteristic energy, he set to work, and it did not take so practised a geographer long to discover that if there were easy grades for a canal through Nicaragua, a route for a *railway* would probably also be in existence. With this idea he narrowly examined the Atlantic coast line, and selected a deep bay forty miles north of Greytown as a fitting terminus for a great railway transit, and then commenced exploring the interior. After a most interesting journey, Commander Pim found his crude ideas beginning to take form and shape. Realejo was chosen as the Pacific terminus, and the project of a new through transit by railway across Central America started. Commander Pim at once purchased the entire Atlantic harbour from the King of Mosquito, and obtained a concession from him for a railway through the intervening country between the Atlantic and Nicaraguan boundary line.

Next came the necessity for a scientific examination of the proposed route, and Commander Pim, accustomed to hardship and danger, and trained in the surveying school, determined to go through himself and then seek from the Nicaraguan Government a right to construct the line. In March, 1863, he sailed for Central America, accompanied by two civil engineers, afterwards joined by a third; and, with a large number of Indians and negroes, the party immediately on their arrival commenced to cut

their tangled way through the dense forest, and the expedition, happily mastering all difficulty, had the satisfaction of proving that the tropical forest did not conceal any obstacle to the construction of a railroad. Commander Pim's subsequent intercourse, however, with the Nicaraguan Government was not so fortunate. War having been declared with San Salvador and a revolution having broken out at the same time, it was impossible to do more than open negotiations for the required concession. Twice was Commander Pim taken prisoner, and was at the city of Leon when the conclusive battle of the war was fought there; but he escaped unhurt, and returned to England to make preparation for returning in October of the same year. This time he thoroughly examined the entire western section, and collected scientific information till February, 1864, when he laid his concession before Congress, and, notwithstanding every effort to throw out the Bill, he had the satisfaction of triumphing over all opponents and gaining his object.

On his return to England he had the great disappointment to find that in spite of his untiring exertions he had to do his work over again, as the nature of the concession was not quite satisfactory to the capitalists in London, he had therefore to return a fourth time to get it altered. In this he was entirely successful, at the meeting of Congress, in January, 1865, though again opposed clause by clause.

Much scientific knowledge of Nicaragua has been gained by Commander Pim's last journey; he has had the lovely scenery of the country depicted in a series of water-colour drawings by an artist of repute, the geological inspection of the strata has been minutely undertaken, has already led to mining enterprise, and must prove a source of wealth to this country, a new road has been cut with a better grade than the one two years ago, Aztec graves have been opened, and every opportunity has been taken advantage of for obtaining the fullest information about Nicaragua.

The imperative *commercial* necessity of a route across Central America, whereby Australia and New Zealand can be reached quicker, safer, and cheaper than by any other,—New Zealand, for instance, in forty days from England instead of sixty, British Columbia brought nearer home, and new countries opened up,—is now beginning to be understood; while, *politically*, should our

communication across Central America be even temporarily interrupted, our vast commercial stake in China, Japan, Polynesia, California, Mexico, and generally in the Pacific, would be imperilled.

Enthusiasm respecting the undertaking exists throughout Nicaragua, and the President, in his Message to Congress, spoke of Commander Pim's enterprise as "the best founded hope, not only of the people of Nicaragua, but of all Central Americans." But the hope that Commander Pim cherishes is to make his route "the highway of nations," to merge every opposing hostile feeling in the one universal benefit to mankind, and to promote the development of those grand results in the futurity of the world which have always followed increased and rapid communication between man and man.

Besides 'The Gate of the Pacific' (Lovell Reeve and Co.), 'An Earnest Appeal on behalf of the Franklin Expedition,' 'Notes on Cherbourg,' etc. etc., Commander Pim has written several pamphlets and articles, the most noteworthy of which are on geographical subjects.



PATRICK MACDOWELL, R.A.

PATRICK MACDOWELL, R.A., was born on the 12th of August, 1799, at Belfast. His father died prematurely,—his death hastened by distress of mind, occasioned by pecuniary involvements and eventual ruin. The future sculptor, still a mere child, and his mother, were thus thrown upon the world, almost without provision. At eight years of age, young MacDowell was sent to school in Belfast, to a gentleman who exercised the profession of an engraver as well as that of tutor. During the four years he remained under the care of this gentleman, the first germs of his genius began to unfold themselves. His schoolmaster having discovered the boy's artistic tendency, through a drawing made by him upon his slate of a sportsman accompanied by his dogs,—a recollection of an engraving hanging in a neighbouring print-shop window,—permitted him, after school hours, to copy engravings which he kindly lent to him.

About the age of twelve he removed with his mother to England, where Mrs. MacDowell had friends. Having secured him two years' instruction from a clergyman in Hampshire, young MacDowell was apprenticed to a coach-builder. This new chapter in his life was exceedingly distasteful to him, but, fortunately for his future career, at the end of four years, his master the coach-builder became bankrupt, thus releasing him from his indentures, and leaving him free to follow the bent of his natural inclination.

It chanced that our youthful aspirant had taken a room in the house of a French sculptor, named Chenu. There his artistic education commenced. He drew and modelled diligently, and produced at length the copy of an entire figure. He soon devoted himself exclusively to modelling in clay, and made so clever a copy

of a Venus by Donatelli, that his landlord purchased it from him for eight guineas.

Inspired with confidence in his future success, our young sculptor removed to a small studio in Seymour Street, Euston Square, and fairly launched forth upon the sea of his profession. Hearing that there was to be a competition of designs for a monument to Major Cartwright, Mr. MacDowell, with but little expectation of success, sent in his model to the committee, and it was at once selected by them, and he received orders to carry it into completion. Unfortunately, the funds subscribed for the statue proving inadequate, an inferior artist was called in for its execution. The widow of Major Cartwright, however, expressed her appreciation of the beauty of Mr. MacDowell's clay design, by wishing to become its purchaser, and her efforts were unwearied to promote the interests of the young sculptor.

Mr. MacDowell, about this period, commenced his embodiment of poetical thought in sculpture, by a subject chosen from Moore's 'Loves of the Angels.' The first commission which he received for a group in marble was from Mr. E. S. Cooper, formerly Member of Parliament for Sligo. The subject was Cephalus and Procris. The work which however established the fame of the rising sculptor was "A Girl Reading." This statue was sold at the private view of the Royal Academy, but a copy was at a later period executed for the Earl of Ellesmere, who immediately after the exhibition of the original statue, commissioned a copy of this graceful work of art.

A most generously intended commission from Mr. Wentworth Beaumont, of Yorkshire, at this time considerably embarrassed the operations of Mr. MacDowell. This gentleman commissioned from him two large groups, stipulating however that he should during three years undertake no other work. This caused Mr. MacDowell to lose many orders, which the beauty and success of his statue of "A Girl Reading" would otherwise have brought him. The works executed for Mr. Wentworth Beaumont greatly increased Mr. MacDowell's reputation, and led to his being elected an A.R.A. Through Mr. Beaumont's friendly offer of requisite funds, and at his suggestion, Mr. MacDowell having nearly completed the first of his commissions for him ("Love Triumphant") visited Italy, studying there all that especially appealed to his interests as a sculptor. Having spent eight profitable and studi-

ous months in Italy, he returned, and completed "Love Triumphant." The second group executed for Mr. Beaumont was the "Death of Virginia." In 1846, Mr. MacDowell was elected an R.A. In the same year he was entrusted by Sir Robert Peel to execute a figure of Lord Exmouth, one of the national statues of British Admirals, destined for Greenwich Hospital.

Visitors to the Great Exhibition in 1851, will recollect as amongst the most graceful of the works of English sculptors, "Love Triumphant," "A Girl at Prayer," "Cupid," "Early Sorrow," "Psyche," "The Death of Virginia," and "Eve." His subsequent works comprise a statue in marble of Sir Michael O'Loughlen, for the Four Courts, Dublin; statues of Pitt and Chatham, for the House of Lords; a statue in bronze of the late Earl of Belfast, for the town of Belfast; a statue in bronze for Limerick of the late Lord Fitzgibbon; a statue in marble, "The Day-Dream;" a group in marble, for T. Baring, Esq., M.P., "The First Thorn in Life;" statue for the Mansion House from Moore's 'Loves of the Angels;' statue of J. M. W. Turner, the celebrated painter, for St. Paul's Cathedral, the competition for which was confined to members of the Royal Academy; a statue in marble of the late Lord Plunket, for Dublin; and a statue in bronze of Lord Eglintoun, for Dublin, also.

Mr. MacDowell is at present engaged upon a monumental group in marble, for the Marquis of Donegal, to be erected in Belfast, and upon the group of "Europe," to be executed in marble for the Albert Memorial,—a commission received from Her Majesty.

Mr. MacDowell has one son, Mr. R. C. MacDowell, whose name is already favourably known to the public as a young sculptor of promise. He has exhibited at the Royal Academy several statues and statuettes.

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